Original Articles.

A PROGRAMME OF PRACTICAL MEASURES FOR MENTAL HYGIENE WORK.*

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

The magnitude of the field of public work in mental hygiene, the manifold ways in which a well-directed and energetic society of this nature may initiate, stimulate and further measures for the amelioration of the condition of the insane and mentally defective, as well as the possible prevention of mental disease, makes one wonder why we should have waited so long for it. Not until recently have we been able to gauge the public interest in this direction, and the result of the exhibits and addresses already given testify to a general eagerness for enlightenment on this vital question.

Although this society is chiefly concerned with the instruction of the community in the prevention of mental disease, another of its stated objects and an equally important one is that of helping to raise the standard of care and treatment of the insane and sufferers from nervous disease throughout the country, and this will be the subject of my address. Much of it is an old story to the alienist.

Considering the very inadequate allowance made by the state for salaries and wages of officers and nurses, the Massachusetts hospitals for the insane have done efficient work in the care and treatment of patients and their regular and diversified employment and in the instruction of nurses. In scientific work they are coming to the fore. Our laws relating to the insane must surely be advanced and serviceable else they would not have been adopted, as have many of them, by other states. But in the adaptation of natural conditions of home life to the insane within their walls through trained visitation and help such as is nowadays, through social service channels, accorded to the sick and invalid poor in their homes, much remains to be done.

We have long held that there is a large field of usefulness open to a resident social worker in the state hospital, lying between the duties of the hospital physician and nursing staff. Social work away from the world seems paradoxical. Nevertheless, the hospital is the only home and "the ward" the only society of hundreds of semi-sane chronic cases, and the misfortune by which they are deprived of family life should not forever debar them from the individual personal attention, regular friendly visits and frequent advice which form the daily round of duties of the trained social worker in outside cases. Visitation by committees of charitably interested neighbors is often urged, but such efforts only touch the surface of the patient's individual interests and needs, however valuable they may be for purposes of inspection. Intra-hospital social work with the individual patient, might be combined with a number of similar duties on the wards and a systematized department of the hospital's activities be thereby developed. Besides regularly visiting and striving to befriend and interest such suitable patients as the physicians may designate, this worker should undertake the proper circulation of the library books and other publications, with which our state hospitals are well supplied, but which are far too little utilized. She might also be responsible for the entertainments and diversions of all kinds enlisting and interesting both patients and nurses in their preparations and soliciting the aid of outside individuals and societies. By all means let us not allow the insane in our institutions to be left behind by the mill and the department store in such "welfare work."

The eugenic field workers now drafted by our hospitals solely for outside disease-heredity investigations are educated, adaptable and sensible women. Their work offers the great advantage of an insight into the home conditions in which patients live and have been brought up. Should not such knowledge be turned to its most beneficent use in enabling the eugenic worker to be a practical help as a social worker, both in establishing friendly relations with the patient while in the hospital and by her familiarity with the family surroundings, protecting him or her from adverse conditions after leaving the institution? Such an officer would be invaluable and should be well paid. In two of the State hospitals the eugenic field worker has already been turned to similar uses, and it should interest all friends of the insane to see hospital activities taking this trend.

Another direction in which the resident social worker may be of service is in visitation in connection with the family or boarding-out system of caring for selected cases from the chronic, harmlessly insane taken from the institutions, of whom small groups are settled in families in the neighborhood of the state hospitals, under state supervision. This department is not much heard of, but has been in operation in this state more than twenty-five years. The number of patients cared for is not far from three hundred. Those who have had charge of the work make no question of its advantage to the patient, the interest of the family in their charges, and the readiness with which suitable families are found to undertake their care. Those best informed believe that a very much larger number —three or four hundred in about each of the eleven state hospitals—could be so cared for and that the extension and full development of the system is imperative. Besides the elasticity of the system the economy to the state resulting from such a provision, because of the fact that no construction will ever be necessary, is a most important advantage. This measure is surely

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one to be encouraged by this society because of its possibilities in the way of betterment of the mental health of the state's charges.

Another measure which as many will be interested to know has proved of benefit to the health and happiness of hospital patients, is the establishment of summer quarters at a distance. We all know the advantages which follow change of residence in suitable cases of mental disease; similarly, opportunity for a "vacation" from the hospital ward among country or seaside surroundings is a real boon. Occasionally patients supposed to have become doomed to permanent insanity have taken there the first step toward the restoration of their reason, so great is the effect of this change, many have improved and almost all are in some degree the better for it. The state hospitals in Maine, New Hampshire, and a few private hospitals in other parts of the country have summer quarters for this purpose to which they send relays of patients every year. Most well equipped general hospitals have, we all know, convalescent departments far removed from the main buildings. Why should they not be more generally provided for the insane?

The education of physicians in mental medicine is sadly deficient. We are much behind the times in this direction, although clinics for instruction in mental disease have been for many years an important branch of medical training in Germany. At Ann Arbor, however, in Albany, in Boston and Baltimore, there has been considerable progress following the establishment of psychopathic hospitals and wards for mental cases in general hospitals and the outlook is promising. But why should not each state hospital be oftener utilized for the instruction of the local practitioner in his neighborhood? It will be a very long time before any but the largest cities can maintain and profitably conduct psychopathic hospitals, and even they may be far out of reach for many busy physicians. Moreover, the medical and scientific spirit in our hospitals might be much encouraged by the establishment of closer relations between the medical staff of our hospitals and outside physicians. A practical step in this direction would be the practice of holding every year at least, at each of our state hospitals a meeting of the medical society of the district in which it is situated, as a regular custom. At such meetings clinics could be conducted by members of the staff and the affair made a scientific and social occasion. In this way the bonds of professional fellowship between the isolated hospital physician and the general practitioner would be strengthened, the outside physician would receive, a little, but valuable instruction in psychiatry, which he sorely needs and would welcome, and the attitude of the community toward the hospital would tend, through his influence and personal knowledge of the medical work done in our institutions and the way in which they are conducted generally, to become more friendly and appreciative. This has been done, to be sure, in one or two of our hospitals on rare occasions. Might it not well be made a regular annual custom with all? On one occasion of the kind the members of the district medical society, who attended a meeting at the Taunton State Hospital in large numbers, were so much interested in what they saw and learned that the society published for the benefit of its members the papers that were read and the demonstration of the cases that were given. The Central Indiana Hospital does much more. Its staff gives a course of a dozen or more lectures to all physicians of the neighborhood who may wish to come. This is open to them free of charge. The lectures are accompanied by illustrations and clinical demonstrations.*

The value of popular lectures on insanity, also, in connection with the leading medical schools, has been fully demonstrated both in New York City and in Boston, if the size and interest of audiences is any criterion. They should be generally made use of in all the large cities of the country.

The pressing needs of the mental defectives in this state who, especially of late, have been brought to light in such large numbers in schools, prisons, and other institutions, besides those especially provided for their care, will be told by Dr. Fernald, a far better authority than I. Let me, however, add my voice to the general demand that is so urgent for the speedy erection of another institution for the care and training of this class, and heartily endorse, more especially, the plea that he has made for the continuous segregation of the defective delinquent. The stand which he has also taken on the subject of the sterilization of defectives is a sound and most needed *ex cathedra* protest against hasty and, as many believe, hazardous legislation on a most radical step, involving private rights and public morals.

We do not sufficiently realize that there is a large field for practical work against mental disease and disorder which is as yet undeveloped, indeed, scarcely entered upon. It comprises the outside, non-hospital cases, some of them insane, others defective, breaking down or hopelessly weakened in mind and others on the borderland of vice, crime and mental unsoundness. Taking the insane alone, we find that during the past six years between eight hundred and fifteen hundred unrecovered patients have been discharged from the Massachusetts state institutions. All of them, of course, remain at large for a time, most of them for a year or more at least, and the rest finally are returned to the institutions. Making every allowance, therefore, it is safe to say that with this yearly supply of discharged patients there must be from this source alone a constant residue of at least a thousand unrecovered insane persons at large in the community.

* Since this lecture was delivered a clinic in Mental Diseases, given by the Boston Psychopathic Hospital staff on two days in the week, has been established with the object of making that hospital a centre of advanced training of physicians in psychiatry.

In addition, there is a large contingent of cases, a fair proportion of whom are presumably of the milder and more curable forms of insanity, who never reach the hospital at all. In 1904, six hundred and eighty-five physicians, comprising less than one-seventh part of the medical men of the state, reported to the Board of Insanity, in reply to a circular letter, that of the 2428 cases of mental disease coming under their observation, but 55% had been committed to hospitals for the insane, while 38% had been treated at home and the rest elsewhere outside of institutions. Had all the 5280 physicians in the state been heard from, the figures would have been even more impressive as regards the number of insane outside of institutions, even allowing for the duplication of cases.

Now, although through recent legislation the discharge of unrecovered patients who have shown dangerous tendencies is quite closely safeguarded, many of the perhaps harmless remainder in the community also need supervision, some of them treatment and some a radical regulation of their life and surroundings. Fortunately, it has become a rather general practice, which should be extended to all of this class, to discharge unrecovered insane patients on a "trial visit" through the legal provision which allows a six-months' probation, so to speak, within which time they may be either returned to the hospital, should their condition make it necessary, or be finally discharged at the end of that period. This practice is by no means so general in other states as it is in Massachusetts. It might well be one of the first to be uniformly adopted by superintendents of hospitals for the insane throughout the country, and we hope it will be everywhere urged by our National Society for Mental Hygiene. At the Taunton State Hospital it has been the custom for the last four years to require unrecovered patients so discharged to report in person at the hospital once a month. This practice has been attended with gratifying results and no hardship to the patients. On the contrary, they often spend an hour or two visiting their old friends in the wards. They seem to appreciate the advice given them and have been materially aided in passing the trial period successfully and re-adjusting themselves to home life.

Here comes in still another avenue of social service, through visitation of the homes of these patients who are out on trial visits. The social worker, through her familiarity with family conditions and the patient's requirements, should here be most helpful, either in removing disturbing influences and regulating unhygienic surroundings, thereby making the probation successful, or in preventing in season insane manifestations which require the patient's return to the hospital. By her intimacy with the family, she would also be looked upon as an interested friend and thus be enabled to keep in touch to some extent with the after-progress of the case. The Metropolitan District about Boston offers exceptional advantages for social service work for outside cases—of which the Boston Psychopathic Hospital has begun to avail itself—because of the many facilities in the way of charitable organizations to turn to for help in placing and visiting patients. In the case of hospitals farther removed from the large centres, it would probably be of great advantage to have the headquarters of the social workers at these institutions, placing the department in charge of the resident worker.

Now, a few words in regard to the class of cases to which after-care, the main object of social service, chiefly applies. The discharged chronic insane, as I have said, need oversight and regulation of their life, but it is with the just recovered and convalescent insane patient that the greatest good can be done. Social service should not be exclusively devoted, by any means, to those who are still somewhat insane or weakened in mind when leaving the hospital, but, knowing as we do, the liability of relapse in mental disease, it is of the greatest importance that the apparently fully recovered patient should not be again exposed to the disturbing conditions and harmful surroundings among which his attack originated. If such cases can only be started on the right road we shall have taken the most practical and perhaps effective step toward the prevention of mental disease that is available. As we have said elsewhere,* in the matter of prevention of mental disease it is a far cry from theory and advice to practice. The education of the public in matters of mental and bodily hygiene so that it shall be productive of real, perceptible diminution in the amount of insanity in the community is necessarily a very, very slow process. Nor can the physician himself always feel sure of his ground in the vast complexity of conditions, personal and social, general and special, hereditary and acquired, which combine in varying proportion and degree to produce a case of insanity. Moreover, could we be sure of the cause or causes that would invariably bring on an attack of insanity, all know how little the warning would be heeded by people in general.

Therefore, the supervision and protection of those who have recovered or are convalescing from attacks of insanity would seem to offer by far the most promising field for prevention effort. In this way alone can we hope to ward off relapse or prolong the intervals of sanity between attacks that are inevitable, thereby helping to lessen the vast accumulation of insane patients in our institutions, a large proportion of whom have been admitted a second time, or oftener. When a patient has once undergone an attack of insanity we can with some certainty ascertain the unfavorable conditions that have led up to it, and can endeavor to improve them, thereby guarding against a relapse. We then know the individual victims, and have,

* The Charities Review, March, 1899.

at least, an actual, tangible, present situation to cope with in the unhealthy surroundings, disease, poverty and stress-conditions of specific cases. Besides, when once an attack has been experienced, both the patient and his relatives for a time at least, are amenable to advice and direction through fear of a return of the trouble. The observation of the progress of convalescence and recovery from insanity becomes itself a lesson in prevention. It is a critical stage, beset with dangers which call for the most careful precautions in order to prevent a relapse. Nowhere is this more frequently observed than in the case of the individual private patient. The countless pitfalls for the reawakening and weakened mind through the indiscretion of the patient, his relatives, or his nurse, and the safeguards necessary, must impress all physicians to the insane.

It is usual on such a patient's recovery from an attack of insanity to advise a trip or a rest in the country as a preliminary to taking up the old life and occupation at home; in fact, the entire year following recovery is a critical time, within which we can never feel sure that mental health has been solidly reestablished. If these are the perils and needs of the patient in good circumstances, whose means and the solicitude of whose family are of the greatest assistance to him in regaining a firm foothold upon health, how desperately unfortunate must be the insane person who is poor, on his discharge from a hospital with scant advice, if any. He has no one to encourage him or to provide the assistance which he may need during the next month or two, just as, with impaired mental and bodily vigor, he is entering the struggle against the forces of want and distress which brought him to the hospital. The patient of small resources who has been insane has generally lost or exhausted all his means, and months, and sometimes years, have passed during which he has produced nothing for himself or his family. The fact, also, that he has been in a hospital tells against him for a considerable time after his return, owing to the ignorant popular prejudice against one who has been insane, and it is much more difficult for him to obtain employment. Instead of the extra consideration he deserves, he now, for a time at least, receives the cold shoulder.

The hospital for general diseases has its separate convalescents' home, miles distant, perhaps, from the main building. Of the very numerous homes and retreats for this purpose at the command of charitable organizations of different kinds, not one is for the insane. Convicts on their discharge from prisons and reformatories have long been aided and encouraged by societies for their relief, while for the insane patient who has suffered through no fault of his own there is no provision of the sort in this state to guard him against the return of a malady, recovery from which is in every sense far more difficult than from any other disease. There are, to be sure, states blessed with charitable laws, where patients are given a new outfit of clothing or perhaps a sum of money on leaving the hospital, but this is the utmost they receive. There are few institutions, moreover, where it is the rule even to give precautionary advice to departing patients and their relatives. They receive at best a few general directions, while it oftener happens that their discharge is unknown to the physician except by report. A renowned French alienist and humanitarian, Dr. Giraud, states that he considers the fundamental principle of "after-care" to be the following:—"Society has not fulfilled its duties to the insane when it has helped them to be provided for and treated in asylums if, on their discharge, it leaves them without support and without resources, and exposes them to causes of relapse." He also adds the obvious argument that we have repeatedly urged, that "this is an omission not only from a humanitarian, but from an economic point of view."

This is not a work of such magnitude as it would appear to be. It calls for a week or so of inspection by an agent of the after-care-association, if one be formed, or a social worker from the hospital who shall make sure that the home surroundings are suitable, provide situations and other material help, if need be, for all needy patients, etc. There should be a systematic supervision of the homes and regulation of the family conditions there existing until the patient is so settled that he starts upon his life and work under good auspices. New York State for several years has had after-care associations in connection with a number of her hospitals and much good is done. It is unfortunate that our own state, whose alienists brought the "after-care" project to the front in this country years before social service for any purpose was advocated should have waited so long to put into practice. The great expectations in this direction that have long been held out in connection with the out-patient department of the Boston Psychopathic Hospital seem now about to be realized, but we should not wait for its development there—the work might be equally well taken up at all our state hospitals. Thus far the social service department of the Massachusetts General Hospital and, notably the Boston Dispensary, have alone made any attempt in this direction although in a very limited field. There has been no coöperation on the part of our state hospitals. It should be one of the principal activities of this society to extend social service to discharged insane from our institutions. If it should be thought wise for the state to take up the work, it should have the hearty coöperation of this society.

Finally, there is a most important line of mental hygiene work which cannot be said to have really seen the light in this country, and I must here renew my plea for the establishment

of charitable sanitaria for the cure or relief of sufferers from nervous diseases who are poor or of moderate means and who are not insane. Years of neurological dispensary work among the poor have convinced physicians so engaged that nervousness, neurasthenia, hysteria, psychasthenia, etc., are quite as prevalent among the indigent as among the well to do. These patients are not insane, but without proper care may easily become so, while under suitable care they may be reclaimed and become useful members of society. The deplorable situation in which sufferers of this class from purely nervous diseases find themselves must surely appeal to us all, but there is no sanitarium in this country, (so far as can be ascertained by a careful inquiry of the leading neurologists living in the larger cities) in which poor or indigent nervous cases in any number can have the exclusive care and prolonged treatment that their malady demands. This great need has long been the subject of complaint among neurologists. In this lack of means for thorough hospital care and treatment of public cases coming in its special line of work, neurology is sadly conspicuous among the departments of medicine generally.

To be sure, there are public dispensaries, polyclinics, and even wards of hospitals which are devoted to the treatment of such patients. But they are very far from being adequate. The chronic nature of nervous malady makes the medical relief obtainable through the short stay, the routine prescription and the advice there provided, of slight and evanescent benefit in many cases. The prime requisite for their improvement is, as we all know, removal of the patient from disturbing influences and environment,—from the emotional conditions bred by anxiety and misery in the struggle for his daily bread. But even this is of little avail unless ample time be given for rest and recuperation. That the few days or weeks that answer for the physical and mental relief of other diseases are of little avail in this class of cases, and that disease which has been long in coming on will be slow to leave, have long been the axioms with which we confront the nervous invalid who is in better circumstances.

A certain number of the poorer unfortunates are sent, after a vain search for better quarters and refusal of admittance on all sides by other institutions, to homes for incurables or convalescents where they may, perhaps, remain a little longer, but where it is impossible for them to obtain what they most need,—the medical advice of physicians, both visiting and resident, who understand such special morbid states and know how to combat and either renew or relieve them. General hospitals are not equipped or adapted for their care, and interest in their special treatment is lacking. There are also wards exclusively for nervous cases in a few general hospitals, but except for the opportunities they afford for clinical teaching they are little better and for the same reasons. Moreover, no cure can be effected in such cases without attention to the details of every day life. This is impossible in a general hospital ward. What such patients need is separate institutions or sanitaria, specially constructed and equipped, where they can have the intelligent technical care that their disease necessitates and treatment for the weeks and months that such cases require before they can really improve. Of course, rest must not be pushed too far as the weakened organ requires strengthening and diversified and interesting occupation graded and suited to the strength and other requirements of the individual must be a prominent feature of the treatment. For want of such provision these unfortunates who are often misjudged by the family and friends "go," as Laehr forcibly puts it, "from doctor to doctor, clinic to clinic, healer to healer, in a vain search for what they need." The growing number of private sanitaria for the more affluent nervous patients shows in itself that this is recognized as the only way in which their proper care can be fully attained. They are a boon to the rich, but are for them alone.

During the last fifteen or twenty years the subject of such special sanitaria has also been agitated in Germany where a number have since sprung up while plans for others are on foot. In Switzerland and Sweden also similar sanitariums have recently been established. Does not our knowledge of this great need make it our duty to help meet it? Should we not inform larger circles of the spread of nervous disorders, of the comparative uselessness of the present modes of treatment in most cases, and the loss to the family and society of the working power of these patients?

The class of cases suitable for sanitarium treatment embraces nearly all the forms of nervous disease except epilepsy, for which special institutions are now being gradually provided in the different states. Besides neurasthenia or psychasthenia—hysteria, hypochondria and mild melancholia, migraine, chorea or St. Vitus' dance, shaking palsy, tic, etc., would be found to profit much by an occasional stay in a sanitarium of this kind. Others are the sequelae of apoplexy, cerebral paralysis in children, early paresis of the mild form, and tabes or locomotor ataxia in the early stages, myelitis, infantile paralysis, muscle atrophies, joint diseases, etc. Such an undertaking should be of the nature of a villa colony with a main building for administration and therapeutic purposes—dwelling houses, work shops, agricultural buildings, farm buildings, dairy, granary, etc.

We should all agree with Jacoby of New York, a warm and able advocate of such a provision that the state can hardly be appealed to for aid until the practical proof of its necessity and benefits has been furnished, and it is even questionable whether it would be wise to seek state support in the beginning. The institution

being essentially a charitable one, it will be found that the impressible neurasthenic will be more willing to place himself under treatment, and will do so with greater freedom of mind, if the colony is a private, rather than a state charity. There are, to be sure, many appeals and plans afoot for charitable purposes, and the process of awakening the attention and interest necessary to lay the foundation of such work would be a long and difficult one, in spite of the general knowledge of the increase of nervous disorders; but we have not yet even made the endeavor, and it might well happen that such a charity would strongly appeal to the very class in which the effects of nervous overstrain are particularly prevalent, the "hustling," never-resting business man whose prosperity has been bought at the expense, perhaps of his nervous health. The history of European colonies of this kind, moreover, should lead us to expect with all confidence that ample financial support would be forthcoming.

This list of measures for bettering the condition of the insane and nervous among the poor is a formidable one, but even so, it does not cover all their needs. If, however, this society should each year take up but a single one of them and devote to its furtherance persistent, energetic and united effort, we may feel sure that valuable beneficent results would soon follow.

PRELIMINARY REPORT ON CONTROL OF PERCUSSION BY MEANS OF THE ROENTGEN RAY.*

BY GEORGE C. SHATTUCK, M.D., BOSTON.

Assistant Physician to the Massachusetts General Hospital and Assistant in Clinical Medicine at the Harvard Medical School.

[From the Medical Out-patient and the Roentgenological Departments of the Massachusetts General Hospital.]

HAVING studied this question for a short time only, I am not prepared to add anything to existing knowledge. My desire is to bring out discussion and to stimulate interest in a branch of work which seems worthy of more attention than it has received in this country.

You are familiar with the variations in the size of the heart shadow which are referable, in individuals, to differences in body weight, stature, age, sex, and occupation. You know the three forms of heart shadow which depend chiefly on the shape of the thorax; you know the difference in position of the heart in the sexes, the shape commonly seen in old age, and the changes of position of the heart in the phases of respiration. Besides these differences, there are minor variations, not easy to define, which are comparable to individual peculiarities manifested in other parts of the body; as, *e.g.*, in the face.

It has been maintained by Moritz, Dietlen, Treupel and others that outlines of the heart having a certain degree of individuality can be obtained by percussion, and that these outlines correspond fairly well with those obtained with the orthodiagraph. Dietlen and Treupel have published large series of diagrams from actual cases. Their diagrams show the outline of the heart shadow as determined by orthodiagraphy, and also the outlines of dullness to percussion. Granted that the diagrams have been reproduced accurately and that subjective errors were suppressed as far as possible in their preparation, the following conclusions may be reached, namely, that the heart can in fact be outlined by percussion with a considerable degree of accuracy, that, not only can the three types of normal heart be recognized in this way, but that the outlines are to some degree characteristic for the individual heart.

Before discussing percussion in detail, let us consider the means and methods by which the results of percussion are to be checked. I refer to teleroentgenography and to orthodiagraphy, of which Dr. Dodd has just spoken. It is not necessary for me to compare them. Each has errors and advantages peculiar to it, and there are other errors common to both. Teleroentgenography, being more mechanical and less subjective, is likely on this account, to give the more reliable pictures. The unavoidable margin of error for either method, when skilfully used, is probably below that for the best methods of percussion. It has been stated by others that the unavoidable margin of error for percussion may be 1 cm. That for orthodiagraphy has been variously estimated at from ½ to 2 cm., but it seems likely that, in the hands of experts, the error will seldom exceed ½ cm.

Therefore, it is right that we should control our percussion by means of the Roentgen ray, but it should be borne in mind that no method of comparative measurement of the heart has yet been devised which is truly accurate, and that the results of any method can be accepted only with reservations.

Passing now to percussion itself, let us consider some of the difficulties met with in its use. In the first place, many kinds of percussion have been recommended, and the style of percussion in practice varies much among individuals. Similarly, the results of percussion, that is to say, degrees of difference of note and type of note vary with the kind of percussion, and with the method of using it of the individual percussing. It follows logically that interpretations of these differences of note will not be the same, and, in fact, disagreement among physicians about percussion outlines is so common as to excite no surprise. But, even when physicians outline the cardiac dullness quite differently, it

* Read by invitation in conjunction with Dr. Dodd's paper at the meeting of the American Roentgen-Ray Society. Boston, Oct. 4, 1913.

does not follow that they will disagree as to the presence or absence of enlargement of the heart. On the contrary, I believe that men of experience generally agree substantially in a given case as to the presence or absence of definite cardiac enlargement. Slight hypertrophy of the heart, unless there is some dilatation also, cannot be demonstrated by any method of percussion, owing to the wide limits of variation between the hearts of normal individuals. For the same reason, slight hypertrophy may not be demonstrable in the heart shadow, however obtained.

Treupel compared the results of three types of percussion with orthodiagraphic outlines, from the same patients. He found the very light or "threshold percussion" to be rather the more accurate. He had good results also with the "touch percussion" of Ebstein and with Moritz's modification of ordinary, moderate finger percussion. The heavy type of percussion is being abandoned, and there is a growing tendency to outline both the absolute and the relative cardiac dullness rather than to be content with either alone. They are complimentary when used together, and tend to correct each other. One can go a step further by marking out curves for very slight dullness, moderate dullness and absolute dullness.

We come now to what seems to me the crux of the matter. Three questions arise. First, What changes of note characterize dullness? Second, What degree of such change shall we recognize as dullness? Third, Is the dullness produced by the heart, by the varying structure of the chest wall, or by various other possible causes? We must not be led astray by differences of note other than those characteristic of dullness. We must take into account the fact that the percussion note at a given part of the chest can be influenced by accidental factors such as muscular contraction, and that such factors may produce slight dullness. We should recognize also the following facts which have impressed me more and more, but which, I think, are not always conceded, namely, that the chest of every individual has a more or less individual tone, and that it is difficult to find two areas on any chest wall where the percussion note will be the same, even though the areas chosen be side by side, or at corresponding points on opposite sides of the chest. If any of you doubt this, I hope you will test the statement yourself in a perfectly quiet room, using a percussion stroke just strong enough to elicit audible lung resonance. The variability of note thus encountered is so confusing at times that I occasionally rely more on the degree of resistance appreciable to the pleximeter-finger than on the note itself, and I think that most practitioners use this feeling of resistance in the same way.

Here again difficulties are encountered because resistance varies with the changing width of the interspace percussed, because the costal cartilages run across the interspaces at an angle near the sternum, and because the relative resistance produced by the dome of the diaphragm or by the corresponding upper part of the liver near the base of the lung may mask the resistance due to the heart.

If all differences of note and of sensation have been correctly interpreted, and if an accurate outline of the heart has been obtained by percussion, we have reason to be pleased with our success.

If there is failure in any respect it may be found that we are trying to compare cardiac dullness too literally with a shadow produced by parallel rays, and that we have not allowed for the curve of the chest wall, which often permits dullness to appear beyond the apex of the heart. This apparent error of percussion, when it occurs, is magnified by the thickness of the chest wall when the point determined on the outside of the chest is compared with the sagittal shadow of the heart itself. The discrepancy so produced was emphasized by Moritz, and has been recognized by others. In cases where dullness reaches thus beyond the apex of the heart the error is not one of percussion, but of interpretation of the findings of percussion.

I believe that those who teach percussion are in duty bound to test their methods carefully by means of x-ray examinations, that orthodiagraphy and teleroentgenography can furnish valuable aid to the clinician, and that the advantage of using them has not received the recognition it deserves in this country.

Before finishing, I wish to express thanks to Dr. Dodd for suggesting the work, and to Dr. George Holmes for help in the work and for taking the plates.

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RELATION OF FOOT AND LEG MUSCLES TO THE STATICS OF THE BODY.

BY C. L. LOWMAN, M.D., LOS ANGELES

In an article entitled "The Relation of Thigh and Leg Muscles to Malpostures of the Feet," published in the Boston Medical and Surgical Journal, Jan. 18, 1912, I pointed out one of the chief factors causing deviations from the

normal leg balance. Further study and observation have brought to my notice many interesting facts in the relation of foot and leg positions to the statics of the body. This is especially true of its *middle segment*—the pelvis and lower back regions.

In examining and checking up cases of postural strains, or of bad body alignment, in patients with foot ailments, or backache—or both—I frequently find points of tenderness to pressure or motion, in front of the hip joint at the point of attachment of the Y ligament; also along the posterior margin and the upper angle of the great trochanter where the pyriformis and other muscles of the external rotator group are inserted.

We know that any increased muscle pull requires a greater anchorage for the point of origin or insertion of that muscle. Furthermore, that constant tension on a point of tendinous or ligamentous attachment, may excite periosteal irritation and subsequent thickening of the bone at that point. Examples of this condition are found in the exostoses of the os calcis,—either on the plantar surface or where the tendo Achilles fastens—and in the enlargements of the adductor tubercle and inner femoral condyle.

I first noticed in the radiographs of some chronic backache cases, and in other cases of severe malposture, a marked lipping of the posterior angle of the trochanter major—enough in some instances to form a real spur. Then a couple of cases sent to me for suspected hip disease were promptly relieved by proper foot adjustment. Several more cases presenting sciatic symptoms—pain in the region of the sacro-sciatic notch, hip, sacro-iliac area, and lower back—also yielded to the same procedure. I then began to correlate the findings, arriving at the conclusion that the inward rotation of the thigh—throwing the knees out of line and producing or accentuating valgus ankles—was responsible either directly, or as a contributing factor, in the production of these symptoms.

Similarly, I have found in cases of back strain, that a constant tension on the ilio-lumbar ligament had produced, at its points of attachment, a lipping of the vertebral margins and a thickening of the crest of the ilia, accompanied by spur formations. In one case there was almost a complete calcification of this ligament, although the patient presented no symptoms of any osteoarthritic process. She had a loose sacro-iliac joint with a tilting of the pelvis, and a slight rotation of the fifth lumbar vertebra. She was of the relaxed type, and had formerly practiced on the violin four or five hours a day. In other cases in which osteo-arthritic changes were more marked there were findings showing postural defects which had preceded, by many years, a so-called "rheumatic" condition. This is in harmony with the idea expressed by Preiser that mal-alignment has an etiological bearing on later arthritic processes.

It has been my habit in examining and talking with patients to say, "You have two ends to your leg; if one end deviates, something will surely happen to the other end." So with simple pronation cases, valgus ankles, and knock knees, the inward rotation of the leg keeps the external thigh rotators on a tension—particularly the pyriformis. The anterior margin of the great trochanter is, of course, displaced forward. This makes pressure against the structures in front of it. Tension is made, also, on the insertion of the psoas by the rotating of the lesser trochanter inward.

The psoas and pyriformis—two very important muscles connecting the thigh with the vertebral column—are further affected at their upper extremities by the posture usually assumed by patients with weak, flat, or round backs. Measurements made with a pelvimeter will easily demonstrate that the distance from the tips of the spinous processes in the mid-lumbar region to the symphisis, if taken in the relaxed posture, will be much greater than when the patient assumes the correct position with the lumbar curve thrown forward. The increase will vary from one-half to two inches. Thus it will be seen that these muscles are kept pulled sufficiently taut, both at their origin and insertion, to produce irritation at their points of attachment. In a tilted pelvis caused by a short leg, unilateral flat foot, or congenital defect, one would get a similar state of over tension on these muscle groups. In the weak back position, the support of the sacro-sciatic ligaments is slackened by the rotation of the tip of the sacrum forward. This gives the lessened anterior curve which usually accompanies these cases of relaxed posture. Cases of weak or slipping sacro-iliacs, so frequently due to weakened ligaments and loss of tone, are but part of a general mal-posture which includes, also, the foot and leg conditions mentioned before. In such cases, the list of the body is toward the sound side. This gives additional tension to the already tense pyriformis and to the other muscles connecting the thigh with the trunk on the injured side. The condition is further intensified by the loosening of the posterior bony support at the sacro iliac point. This allows the ilium to sag down and to rest, as in a hammock, upon the muscles passing under the notch between the great trochanter and the vertebral column. These conditions, to my mind, account for a great deal of the backache and bodily tire in postural cases, particularly the foot and leg cases. Relief from such symptoms is often brought about by the application of plates and shoes so adjusted as to throw the weight to the outer border of the foot and rotate the os calcis outward.

I think this result is obtained because the knee and thigh are rotated outward, slacking off the muscles above mentioned, giving them a chance to rest and recuperate, thereby reducing the irritation at the points of bony attachment—below

in the region of the hip and above along the lumbar vertebrae. Consequently, I feel that in children and young adults the mere application of arch plates, shoes, and a few corrective exercises applied to muscles *below* the knee are not sufficient to control the actions of the upper end of the leg lever. Such cases should, after necessary rest and the relief from their pain—if any—be given *corrective exercises for the muscles of the thigh and back* if we wish to permanently benefit them, get physiological as well as mechanical results, reduce their leakage of nerve force from the overwork of such large groups of muscles, raise their efficiency for both the present and the future, and insure their latter years against backaches, neurites, disturbances of function in abdominal and pelvic viscera, and probable arthritic changes.

In a short time I hope to add a further report on these observations and shall appreciate criticisms, suggestions, and reports of cases from fellow investigators.

CHRONIC MALARIAL CACHEXIA AND ITS RELATION TO NEURASTHENOID CONDITIONS.*

BY CURRAN POPE, M.D., LOUISVILLE.

Medical Superintendent, The Pope Sanatorium; Neurologist to the Louisville City Hospital, Louisville, Ky.

THERE are few physicians indeed, who are not called upon with varying degree of frequency, to treat the acute and chronic manifestations that arise from an infection of the Plasmodium Malariae.

North of that imaginary boundary, the Mason and Dixon line, the condition ordinarily termed "Chronic Malarial Cachexia" is rarely found, and this is to a certain extent true of a few states in the South. Those of us who are engaged in sanatorial work and who receive a good many patients from the far South, come in contact, with a fair degree of frequency, with these manifestations of chronic malarial poisoning, probably more than practitioners in cities farther North.

These patients usually give the clinical history of a severe prolonged or frequent and repeated attacks of malarial infection.

SYMPTOMATOLOGY.

The skin presents a peculiar appearance. In the majority of cases this alone is very suggestive of chronic malarial cachexia. The cutaneous surface is usually sallow, of a rather muddy-saffron hue, dull and at times dusky looking. It is, generally speaking, dry and harsh, cool or even cold and flushes poorly. There is considerable pigmentation. This condition is much accentuated on the face and hands where the skin has been exposed to the action of sun and air. The palms rarely sweat and the skin reacts very slowly to hydrotherapeutic measures. These patients give one the impression of a person who is suffering from some derangement of the adrenal system. The peculiar *facies* so difficult to describe, but so well recognized by the experienced eye, under the generic term "cachexia" is generally present.

With the rarest of exceptions, these patients present a general leanness, in fact *emaciation* would probably better describe the condition. There is muscular weakness, considerable stiffness with aches about the joints and following certain muscular movements, especially of the back. Under palpation and manipulation the muscles feel flabby, convey to the touch of the examiner a denutritional state that is thoroughly in accord with their complaint of weakness and easy fatigability.

Careful personal observations have taught me that there is nothing more unreliable, uncertain and irregular than the *temperature* of these patients. My cases have ranged from markedly sub-normal, normal, up to irregular temperatures of 100 to 102° F. These observations have been based not upon occasional, but upon careful and persistent daily use of an accurate thermometer.

The *circulation* is almost constantly affected. The heart action is rapid, especially on exertion and cardiac murmurs may be present. I have found quite a number of endo-cardial ones and with fair degree of frequency anemic murmurs. The pulse is usually poor, small, compressible, rapid, with a flabby feeling to the arteries. Its rapidity is quickly increased on exertion. *Blood pressure* readings show a general lowering of both the systolic and diastolic pressures. My observation has been that the pulse pressure is usually in the neighborhood of 20. A great many of these cases complain of cardiac oppression, and palpitation is an exceedingly frequent symptom. The cardiac oppression and palpitation, however, is different in degree and character from that found in the *anxiety neurosis*, being less sharply defined, rather more diffuse and much less intense. It is much worse upon exertion. Usually there is no *angst* accompanying the cardiac and precordial manifestations. An edema of the ankles in the evening is a frequent symptom.

The *gastro-intestinal tract* is *always* affected and oftentimes presents a very prominent symptomatology in the case, these symptoms vary in degree but are present in nearly all cases. Undoubtedly this condition adds to the suffering, discomfort and general cachexia of the patient.

The *tongue* is usually pale, flat and broad, flabby, indented and coated with a moist, white covering, greatest at the posterior portion and occasionally tapering to a point at the tip. I have rarely seen red edges, in fact, pinkness is

* Read before the Ohio Valley Medical Association at Evansville, Ind., November 5-6, 1913.

hardly ever present, the tongue presenting somewhat the washed out and partially shriveled appearance of the "washerwoman hands."

The *breath* is usually foul and suggestive of putrefactive changes in the gastro-intestinal tract. It is a condition that harmonizes well with the appearance of the tongue.

The *appetite* is very fickle, irregular and at times peculiar, but a distinct loss of the desire for food and a tendency toward complete anorexia is present.

Gastric digestion may be encompassed under the term weak. Those cases that do not present a hyperesthetic nervous system, will be found showing a diminished amount of the normal acidity, while the hyperesthetic cases are apt to show a hyperacid condition. In both, however, much more especially the hypoacid cases, a great deal of gas is present and the clinical appearance is that of an atonic state.

The *intestinal activity* is very much weakened.

The *abdomen* is usually distended, the patient complaining of pressure and general discomfort. Constipation may alternate with diarrhoea, but the former has in my experience occurred practically in all cases; the latter rarely.

Fatal hemorrhage has been spoken of, by some authors, as occurring in these cases, but I have fortunately never seen a case of this character. The whole type of symptomatology which the gastro-intestinal tract presents in this disorder, is that of a low grade chronic inflammation. All the gastro-intestinal symptoms are much more marked than in neurasthenia.

Physical examination of the abdomen will oftentimes throw diagnostic light upon these cases and where chronic malarial cachexia is suspected, it would be a grave omission, from a diagnostic standpoint, to overlook a careful examination of the abdominal contents. In most of the cases I have seen the spleen has been enlarged. The spleen is usually indurated and may be so greatly enlarged as to be almost massive, although this is a rather rare condition in my experience. Careful percussion, with the patient standing, will show the spleen area of dullness to be considerably increased and palpation may, in some instances aid in the diagnosis. I have found the *liver* as frequently enlarged as the spleen, in fact, the area of the liver dullness has oftentimes been found to be increased as much as the width of two or three fingers and is, I believe a valuable confirmatory sign. The enlargement of liver and spleen together with the presence of gas in the intestinal tract, tends to make the abdomen prominent.

There is a high grade of *anemia* which corresponds with the patients appearance, which as above stated is usually pale and thin. Of the laboratory findings in these cases, we will have more to say later on.

The nervous symptoms are most marked and are neurasthenoid in character. The term *"neurasthenoid"* is employed, as the writer does not believe this to be a true neurasthenia in the strict interpretation of the term as it is employed by neurologists and psychiatrists today, but that it closely resembles the condition is undoubted and therefore the terminology employed. All mental and nervous symptoms are less in degree than in true neurasthenia. All cases complain of more or less general constant *lassitude*, usually worse in the afternoon and evening, with marked disinclination for physical and mental effort. There is a general disinclination to mental effort, depression, irritability and peevishness and general nervousness, much more marked in the latter part of the day than in the early morning.

In certain male, and in nearly all female, cases there are minor *hysteroid* symptoms with a tendency to emotionalism and a "filling" of the eyes or often actual tears. Subjective *vertigo* is present in certain cases, usually past the meridian of life and possibly due to vascular and toxic conditions. *Insomnia* is one of the most marked symptoms we have to deal with and more closely resembles the true neurasthenic insomnia than almost any other symptom. The patient has difficulty in getting to sleep and is restless until sleep comes. The loss of sleep aggravates greatly the patients condition.

It is a rarety to find cases free from *headache*. This is usually of a dull, heavy character, more often frontal. It is usually worse during the day but does not seem to prevent sleep. It is aggravated by intercurrent disturbances of the gastro-intestinal tract. We do not find in these cases, in my observation, the *"brow-ache"* that is commonly ascribed to malarial conditions. Where *neuralgia* is present, we are more likely to find an active malarial process than a cachexia.

LABORATORY FINDINGS.

The laboratory findings are often interesting, although they may not show any findings that are pathognomonic. The *urine* is usually diminished in quantity; has a higher grade of acidity (35-50); there is diminished urea elimination, unless the patient is rapidly losing flesh. There is oftentimes a trace of albumen, urobiligen and indican. The microscope frequently shows casts and cylindroids, which with the presence of albumen constitutes what the French have very aptly called *"la petite Bright's."* There are usually many epithelia, some from the kidney, but the majority from the bladder. In men we frequently find evidence of prostatic irritation. The *blood* should always be carefully studied. Sometimes its appearance microscopically corresponds with the evident high grade of anemia that is nearly always present, for these patients look the part. The hemoglobin runs low, oftentimes 50 or below, while the red cells are greatly reduced in some instances to close around one million. The microscopic study of the fresh drop will show very pale red cells, many of them distorted although one could hardly say that we have to

deal here with a true poikilocytosis. Oftentimes granules of pigment are found floating in the blood, but more often in the white blood cells. This observation was first made by Manson, of the British Indian Medical Service, and since the publication of his interesting paper, we have looked constantly and searched persistently the blood of these patients for this pigmentation. Lately Wade Brown has shown that the pigment elaborated from the hemoglobin of the red cells by the malarial parasite is hematin. He injected this pigment into the circulation of rabbits and produced a series of phenomena strikingly like a true malarial paroxysm in man. It would seem from this that hematin was the cause of the paroxysm.

We have not found the malarial parasite in the blood with any degree of frequency. Where it has been discovered there have been, as a rule, some acute manifestations engrafted upon the cachexic state. We have often called in question this failure although the blood has been studied under many conditions in the hopes that they would be found.

The *gastric analysis* usually reveals either a decrease or an increase of the acid content, which, as we have said before, we believe to be due to the question as to whether we are dealing with a hyper- or hypo-esthetic nervous system; in the former we would expect to find a hyper, in the latter a hypo-acid condition. A good many cases have a complicating gastritis of low grade, which may, as we well know, accompany either a hyper or a hypo state.

It may not be amiss to state that since the introduction of serological methods, the cases that form the basis of this clinical study have been subjected to a careful investigation along these lines, employing the methods of Noguchi and Weil (Cobra Venom Test) in order that there might be no question as to a syphilitic taint.

DIFFERENTIAL DIAGNOSIS.

The frequency with which these cases are labelled neurasthenia, has led me to be very careful in their separation. The tendency to tag all cases of whatever nature that seem to be generally run down, that have a number of functional (?) nervous symptoms cannot be too heartily condemned. While these cases have many mental and nervous symptoms due to the toxemia of the malarial poisoning, they are not, in the modern conception of the true neurosis, neurasthenic. Neurasthenia as limited today by recent investigation, is an entity (pressure in the head, spinal irritation, dyspepsia with flatulence and constipation, paresthesiae, diminished potency and emotional depression) that the neurologist recognizes as due to conditions other than toxemia. In fact the very careful separation of the true neurosis of neurasthenia and anxiety-neurosis from the many pseudo-neurasthenias that arise from irregularities of the internal secretions, from the various toxemias and other causes, is one that requires no little diagnostic acumen. To have at hand a capacious waste basket into which we may drop our difficult diagnostic problems is undoubtedly an easy solution of the case in hand, but the patient is in the unfortunate predicament of the cat, who is swung by the tail in a room of small proportions. Comfort, at least, is not with the cat. We believe that close *observation alone* would in many of these cases lead the physician to *suspect* what might be the underlying *causus morbi*. Nor should he forget to eliminate hypertrophic hepatitis, Bantis Disease, etc., and any other general or abdominal disease or disorder, merely because of the deceptive appearance of a group of functional (?) nervous symptoms.

DIFFERENTIAL DIAGNOSIS.

MALARIAL CACHEXIA.	NEURASTHENIA.
Skin: Sallow, muddy, dry, harsh.	*Skin:* May be clear, pale, ruddy, flushed, moist.
Palms: Rarely ever sweat.	*Palms:* Commonly sweat.
Skin reaction: Very sluggish.	*Skin reaction:* Very active.
Emaciation: Muscular flabbiness and genuine weakness.	*Emaciation:* Absent. May be fat, muscles and tissues firm, weakness neural rather than physical.
Temperature: Variable.	*Temperature:* Variable.
Heart: Murmurs frequent.	*Heart:* No murmurs.
Pulse: Rapid, small compressible.	*Pulse:* Variable, may be large.
Blood pressure: Lowered.	*Blood pressure:* Variable.
Gastro-intestinal symptoms: Resemble each other but more marked and definite.	*Gastro-intestinal symptoms:* Less definitely marked.
Abdomen: Protuberant, distended.	*Abdomen:* Negative. Ptosis occasionally.
Spleen: Enlarged.	*Spleen:* Not enlarged.
Liver: Enlarged.	*Liver:* Not enlarged.
Anemia: Always present and of severe grade.	*Anemia:* May be present: relatively moderate.
Mental symptoms: Same in both, but less in degree.	*Mental symptoms:* Same in both.
Nervous symptoms: Same in both, but less in degree.	*Nervous symptoms:* Same in both, but greater in degree.
Blood: Pigment: pigmented white cells.	*Blood:* None.
Urine: Petite Bright's present.	*Urine:* Petite Bright's absent.

Recapitulating we may remark that:

1. The symptoms in true neurasthenia, are as a rule, worse in the morning instead of the afternoon; are more of the fatigue and irritative type and more intense than are present in chronic malarial cachexia.

2. The abdominal symptoms enumerated above: these are rarely found in cases of true neurasthenia.

3. The *cachexial* appearance, color and reaction of the skin; an emaciation that is suggestive.

4. The laboratory findings.

TREATMENT.

The success that we have attained in the treatment of these cases has been one of the incen-

tives to the publication of this clinical study. The cases have nearly all been hospital ones, under absolute control as regards their hygiene, diet, rest and the following out of the treatment laid down for the particular case in hand. We mention this as we believe that *hospital* or *sanatorial* treatment and absolute control of the patient are essential for the complete relief of these patients and their return to normal activity. About ninety per cent. were ambulatory, the remainder bed-ridden when the cases came under our observation and treatment. The first step was to lay down hygienic rules as regarded their lives, clothing, rest, exercise, etc. In general they led regular and restricted lives, securing a great deal of rest and especially resting for an hour or longer following the various treatments employed. Weak cases were given modified "rest cure" methods. In all instances, the patients were fed as we would feed them for intense anemia and a low nutritional state, in other words the diet was as fully nutritious and varied as much as possible in order to induce the full consumption of food that the gastro-intestinal organs could take care of, with the aid of gastro-motor tonics and digestants. The endeavor was to increase the quantity and quality of the blood and put fat upon those who were both "lean and hungry;" those who were bed-ridden were treated in bed until able to get up, at which time graduated exercise and a slow resumption of activity was followed out.

During the treatment we have had *acute* malarial attacks to occur, in fact, we are positive that attacks have been brought on by forcible concussion of the twelfth dorsal and first, second and third lumbar vertebrae, by a *very powerful jet douche*. Clinically speaking, we feel that the concussion of these vertebrae produced a contraction of the spleen with a consequent liberation of the malarial organisms and a resulting attack. In several cases we have noticed a malarial attack follow the concussion (mechanically) of these vertebrae and believe that the mechanism of its production is as above stated. If an acute attack supervenes, it should be treated as such without regard to the treatment of the cachexia.

PHYSIO-THERAPEUTIC METHODS.

Massage, both manual and mechanical, is very valuable in the management of these cases, owing to its general tonic effect and its influence upon the nervous circulatory and eliminative organs. As has been known for many years, massage and vibration are reconstructive, largely through their influence upon nutrition and through metabolic changes in the organism. That it has a beneficial influence in these cases can be very readily shown, where we have utilized it as the *sole* mechanical or physio-therapeutic remedy in conjunction with dietetic and hygienic control.

We use *electrotherapy* in these cases: it is an adjuvant but possesses no specific value; is useful in the treatment of certain local manifestations, especially the digestive disturbances and the constipation. Of course, in improving the functional activity of the gastro-intestinal tract and bettering its evacuation, it becomes a contributing factor in the general up-building of the patient. Those currents best suited for these cases are the *galvanic,* using large enough pads to cover both spleen and liver; the *sinusoidal* for its muscular effects upon the intestine and the *static* wave current, per rectum and over the liver and spleen.

Hydrotherapy, we believe to possess a specific influence in this disorder and the results obtained by its use have been such as to lead us clinically to depend upon it as the main weapon in the combat of these cachectic states.

Two classes of cases demand treatment: the bedridden and the ambulatory.

Where the case is bed-ridden, we commence the treatment with a cold sponge at 60-50° F., using a crash glove and secure reaction by vigorous rubbing with a crash towel. As soon as the patient's reaction is well established, we use the dripping sheet at 60-50° F. rapidly applied with good friction once or twice daily. The details of this and subsequently described methods, I have given fully elsewhere.* As soon as the case is up and about, the ambulatory method is employed.

Should a chill develop, the method usually employed is to order hot drinks of either plain or flavored water, lemonade, etc., with hot water bottles to the feet and surrounding the patient or the hot full bath at 102-104° F. for ten to fifteen minutes, followed by rapid drying and lying between blankets; these will give much comfort and shorten the attack. With the subsidence of the chill, we usually wait one hour and if there is no sweating and the temperature begins to rise, we allow the patient to drink freely of cold water and order the cold sponge at 60-50° F. applied singly to an extremity, then to the back and finally to the chest and abdomen, being careful to dry each part as soon as it is sponged and to use a crash mitten or rag in order to produce sufficient friction to dilate the surface capillaries. If, however, the patient should be sweating the parts must first be thoroughly dried after which they are rapidly sponged with very hot water (110-115° F.) the mitten or rag being squeezed dry before being used for the sponging. Each part must be dried and immediately returned to the cover.

If it is believed that a chill is approaching and it is desired to *abort* the attack, the patient should be given large quantities of hot water internally and the hot full bath at 102-104° F. for ten to fifteen minutes and kept warm until the threatened attack has passed.

As soon as the bed-ridden cases are able to get about and for the ordinary ambulatory cases, we employ the following method:

* Practical Hydrotherapy. Cincinnati Medical Book Co.

1. *A hot procedure to perspiration.* For this purpose we can employ the hot full wet pack, the full dry pack, the vapor, hot air, superheated dry hot air or incandescent electric light bath; the latter is undoubtedly, and by far, the best heat measure in such cases, as it acts not only as a provoker of perspiration, but accomplishes this and at the same time stimulates the patient.

2. *A preliminary warm application.* This may be a sponge, the dripping sheet, the hot half bath, full bath, shower, rain, needle, spray or douche.

3. *A cold application.* This may be likewise a sponge, dripping sheet, cold half bath, affusion, shower, rain, needle, spray or douche.

The best all-round combination for ambulatory cases with this disorder, is as follows:—Incandescent electric light bath to moderate or free perspiration, according to the strength of the individual; the needle, rain or shower bath at 102-104° F. for one or two minutes reduced to 60-50° F. for one-fourth minute under twenty to twenty-five pounds pressure, followed by the Scottish jet douche to the spine, (10th dorsal to 4th lumbar) and over the liver and spleen at 105° F. or more under twenty pound pressure reduced to 60° F.; the alternation should be hot douche one-half minute alternated with the cold douche for ten seconds, three to four alternations.

Following each application, the patient should be thoroughly rubbed and a reaction secured. By reaction we mean the pleasant glow, pinking of the skin and tonic state of the circulation that directly results from the manifold reflexes, etc., that follow the cold application. It is advantageous for the patient to rest quietly after the treatment and to be instructed to drink eight to ten glasses of cold water daily.

MEDICINAL THERAPY.

Most of these cases that come under our professional care have been dosed to death with medicine; have taken calomel, quinine, arsenic, and many other drugs in varying forms and for long periods of time. From our personal experience we would say that very few drugs are of advantage in these cases and that most of them are best employed by the hypodermic method. The first group consists of iron, arsenic and quinine. We prefer to administer iron and arsenic hypodermically daily and believe that there is a certain advantage in giving it in the morning before the hydrotherapeutic measures, as we believe that these favor its better distribution and action, in fact, we are inclined to believe, from clinical observation, that nearly all drugs can be given in smaller doses with better effect and surer physiologic action where hydrotherapy is employed. We believe that iron and arsenic is better in the cachexia than quinine. Where an acute attack is threatened or where one has taken place the hypodermic administration of quinia bi-sulphate in from two to four grain doses will oftentimes spare the patient the nerve racking influence of large doses by the mouth and at the same time be far more effective when given in this way. It is astonishing sometime the beneficial results that come from its use. The other group are the fats of which cod-liver-oil, Sevetol, Russell's Emulsion, butter, olive oil, mayonnaise and a host of other emulsions may be employed. In this connection, it must not be forgotten that real rich milk and cream can often take the place of emulsions.

METHOD.

The methods here enumerated, are as a rule worked into a "system" for each individual case, that is to say the hygienic rules that are to govern the patient are first laid down and explained. The diet is then arranged, the rest prescribed and such medicinal measures as are deemed wise given. The day is divided up so that certain local or special treatments, to meet certain lesions or conditions, such as headache, insomnia, splenic and hepatic enlargements, gastro-intestinal disturbances, etc., and the hypodermics of the drugs used and suggested, given. In the mid-day the hydrotherapy and in the afternoon or evening the massage. In this way we are able to meet many conditions that are clinically indicated in the particular case in hand.

AIM OF TREATMENT.

It will thus be seen that the aim of treatment, as herein outlined, is to:

1. Increase the general neural and vital resistance.
2. Increase the hemoglobin, corpuscular richness and leucocytal activity of the blood, thus overcoming the anemia.
3. To destroy the parasites, at any time should they be present or become active.
4. To increase the elimination of toxins.
5. To stimulate normal metabolic changes.
6. To overcome the neurasthenoid state.

RESULTS.

We have had to deal with quite a large number of these cases and the remarkable success that has attended the method herein outlined has led to the publication of this paper. These patients must be carefully handled and persistently treated. Their cases require time, care and attention, but where this is persisted in brilliant results follow.

It has seemed to us that there are a certain number of cases that seem to possess a peculiar sensitiveness to the malarial poisoning and who have a tendency to develop the cachexia. To these people we advise removal and residence in a non-malarial district and that if this is not sufficient that they be given iron, quinine and arsenic hypodermically and that they take hydrotherapeutic treatment for a number of months until the tendency is entirely eradicated.

A STUDY OF CANCER.—BY SEELYE W. LITTLE, M.D., ROCHESTER, N. Y.

(*Concluded from page 166.*)

TABLE I.

Tissues derived from different germ layers.

ECTODERM.	MESODERM.	ENDODERM.
Entire nervous system.	Blood vessels (except lining endothelium).	*Epithelium* of entire alimentary tract (except anus and part of mouth) and of all glands opening into alimentary canal.
Epidermis.	Bones.	
Hair.	Muscles	*Epithelium* of eustachian tube and tympanic cavity, of trachea and of entire lung apparatus.
Nails.	Connective tissue.	
Enamel of teeth.	Spleen.	
Epithelium lining.	Generative and urinary organs (except lining epithelium of bladder and urethra).	*Epithelium* of bladder and urethra.
Sebaceous. Sweat. Mammary. } Glands.	(Fat probably transformed connective tissue cells,—first appearing in embryo about fourteenth week).	*Endothelium* of heart blood vessels and serous cavities.
Epithelium lining nose and part of mouth and pharynx (all mouth in front of pharynx except tongue which is of *endo*dermic origin. That part of pharynx left as remnant of ant. lobe of pituitary is of ectodermic origin).		

TABLE II.

Derivation (embryologically) of "ductless glands."

ECTODERM.	MESODERM.	ENDODERM.
Ad renal portion of suprarenals (*that is, the medullary part*).	*Inter*renal portion of suprarenals (*that is, cortex*).	Thymus.
		Thyroid.
Pituitary body.		Parathyroids.
Carotid body.		
Coccygeal body. ?	Coccygeal body (*probably from medial sacral artery*).	Pancreas, Islands of Langerhans (epithelial origin).
Pineal body.	Testicles (Leydig's cells).	
	Ovaries.	
	Corpus luteum (*epithelial*).	Gastric and intestinal mucosa.
	Interstitial cells (*connective tissue*).	

TABLE III.

Cancer of *mesodermic* tissue occurs only in:
- Generative and urinary organs (except lining membrane of bladder and urethra which are endoderm).
- 18% of all cancers.

Cancer of *endodermic* tissue occurs only in:
- Entire digestive tract with all glands opening into it (except anus and mouth).
- Entire respiratory tract.
- Eustachian tube and tympanic cavity
- Epithelium of bladder and urethra.
- Endothelium of heart, blood vessels and serous cavities.
- 64% of all cancers.

Cancer of *ectodermic* tissue occurs only in:
- Entire nervous system.
- Entire epidermis (including hair, nails and enamel of teeth).
- Epithelium of sebaceous, sweat and mammary glands.
- Epithelium of nose and mouth (except tongue—endo).
- 19% of all cancers.

(Above percentage is from *classified* cancer deaths in New York State for first six months of 1913. There were besides 754 unspecified cancers. Over 8000 per year.)

Above percentages are approximate

TABLE IV.

Six Months' Cancer Deaths in New York. Unspecified.	ECTODERM. (Skin, mouth, breast.)	MESODERM. (Fem. Genital Organs.)	ENDODERM. (Stomach and liver, peritoneum, intestines and rectum.)
1913			
	19		252
	26		116
June 117	58—103	111	—368
	20		255
	16		84
May 130	57— 93	94	—339
	21		300
	21		108
April 128	70—112	113	—408
	19		280
	33		84
Mar. 112	70—122	95	—364
	17		253
	17		98
Feb. 119	75—109	108	—351
	21		300
	23		90
Jan. 148	62—106	97	—390
754	645	618	2220

TABLE V.

Ductless glands presumably mainly at fault in cancer of *mesodermic tissues:*

Derived from *mesoderm.*
- Cortex of suprarenals.
- Leydig's cells of testicles.
- Ovaries.

Ductless glands presumably mainly at fault in cancer of *ectodermic tissues:*

Derived from *ectoderm.*
- Medulla of suprarenals.
- Pituitary body.
- Pineal body.

Ductless glands presumably mainly at fault in cancer of *endodermic tissues:*

Derived from *endoderm.*
- Thymus (in young).
- Thyroid.
- Parathyroids.
- Pancreas (Islands of Langerhans).

TABLE VI.

Conditions often producing hyperglycemia and glycosuria.

Hyposecretion.
- Islands of Langerhans (except in cancer?).
- Parathyroid?

Hypersecretion.
- Suprarenals.
- Thyroid.
- Pituitary.

TABLE VII.

Tolerance for sugar without glycosuria.

Hyposecretion.
- Pituitary. } Ectoderm.
- Sprarenals (medulla). } Ectoderm.
- Suprarenals (cortex). } Mesoderm.
- Ovaries and testicles. } Mesoderm.
- Thyroids. } Endoderm.
- Parathyroids. } Endoderm.
- Islands of Langerhans (in cancer?). } Endoderm.

It is interesting to notice, counting the thyroid and the parathyroid as one system, that for each blastodermic layer there are two ductless glands one or both of which may be at fault in producing the characteristic tolerance for sugar in cancer patients.

THE CASE FOR RADIUM THERAPY.

BY SAMUEL DELANO, M.D., BOSTON.

(*Concluded from page 163.*)

II. EMANATION.

Internal Use. As we have seen, a radium salt depends for its ravage upon the formation of the emanation and further splitting of this into its chain of decay products, Radium A., B. and C. Emanation, in its subtlety and tenuity almost deserves the name of aura or atmosphere. It is, however, a noble gas, obeys all the laws of gases, but is inert—not affected by chemical agents. An idea of its want of bulk may be gained from Soddy's comparisons. The quantity given off by 30 mgms. of radium would still have to be multiplied by 30 to amount to a bubble of a pin's head size. One billionth of a mgm. of emanation may be recognized with ease, and measured. Nevertheless, it may be manipulated and captured by a mechanism. It can be drawn through capillary tubes, liquefied by liquid air, released again into a vapor in a vacuum and finally forced into a capillary tube by a mercury pump. By means of this imprisonment it may be used for radiation purposes and, bulk for bulk, has vastly more strength than the radium salt itself.

In the tube, however, it cannot do one thing that it can when free, viz., cause radio-activity in other objects; when free, emanation in the most minute quantity will, by its splitting into decay products, produce what is called induced radio-activity—a condition which is dependent upon the emanation precipitating its secondary deposit (Radium A., B. and C.). While emanation itself is a gas and has no chemistry; the secondary deposit is metallic in nature, and though impalpable, may be removed by acids, heat, or even sandpaper (in which case the sandpaper becomes radio-active!).

Emanation, through its powers to ionize gases, is just as good a measure of the activity of rădium, qualitatively and quantitatively, as are the rays through the evidence of, the photographic plate, the burn, the phosphorescent screen and the ionization. The secondary deposit, of course, furnishes rays by passing (at various distances of time (minutes) through the decay series Radium A., B. and C. Thus a frog killed by exposure to the emanation will photograph itself.

Perhaps nothing better expresses the ubiquity of radio-activity (emanation) than the Biblical phrase, "In the heavens above, in the earth beneath and in the waters under the earth." Gushing from the earth we have the radio-active waters of the so-called neutral springs, the *wildbäder*, with their powers renowned for centuries. We have the radio-activity of the soil, the atmosphere and the sea water, and in the heavens we know, at least, of the presence of Helium (identical with Alpha particles) in the sun, while the fresh fallen rain and snow are radio-active.

Emanation is toxic to animals, and destructive to vegetable life, but non-toxic to man, and a healthy individual is not affected by a dose to which disease reacts. Thus emanation kills the germs of plants, shrivels leaves, destroys hair, nails, ovary, testicle, coagulates albumen of egg, discolorizes the yolk (destruction of lecithin), but it wields many other influences that evidently cut a large figure in its therapeutic quantivalence.

By its mere presence emanation proves itself possessed of catalytic powers, *i.e.* capacity to start or intensify reaction between two other agents. Thus:—

Air and emanation in a tube—the product is nitrous oxide. (Cf. the synthetic production of nitre from the atmosphere by electricity.)

Oxygen and emanation—the product is ozone

Iodoform and emanation—iodine.

All the various fermentations are actively goaded along *in vitro* by emanation—gastric and pancreatic, glycolytic and diastatic, lactic and yeast. It also stimulates autolysis. Of two pieces of cancer tissue in water, the one exposed to radium emanation decays seven times quicker than the other.

But the activity of ferments in nature's laboratory must be much greater than in a test tube; *cf.* the rapid synthesis of proteids from the food. Therefore a much smaller amount of chemical energy is necessary in the body. Hence the entire naturalness of the conception of small quantities of emanation as an active agent. In this connection, compare the fact that one microgram of adrenalin will affect blood pressure. Every process concerned in metabolism in the body must have its specific ferment. Emanation may be looked upon as a strong (general) ferment. Entering the blood it may be absorbed by the colloids (as it is by charcoal); the secondary deposit (metallic) forms a metallic colloid solution analogous to the colloid solution of the metals. This activates the blood, and in consequence all processes of the body are activated.

Prof. Hertwig finds that the blood and lymph cells and the hematopoietic organs are especially affected by radio-activity. Horsely finds that in the nervous system changes are mostly vascular.

Emanation—How Taken? Emanation may be introduced into the system either by drinking water containing emanation, by inhaling the emanation, by bathing in water containing emanation, or by injection.

When inhaled, much immediately returns with exhalation; it is desirable, therefore, to reduce the cubic space, that the emanation may be rebreathed. Taken into the stomach, a good portion escapes via the portal system, right side of heart and lungs. In a bath the process is again one of inhalation largely—there being consider-

able dispute as to whether there is even a small absorption by skin. By injection intravenously the whole amount gets placed.

It is figured by Lazarus that only one-tenth of the inhalation dose is effective, nine-tenths being lost. The blood can be proven radio-active in a few minutes, and with the usual dose all emanation has disappeared from the system in from two to four hours.

The half period of emanation is 3.8 days, *i.e.* in that time half of it has decayed—after that the process goes on in geometrical ratio till a finality is reached in thirty days.

In the case of radio-active water, as *e.g.* from springs (or water made radio-active by contact with an insoluble radium salt) a rapid loss in emanation is the rule, if it has to be handled or transported. Thus most bottled spring waters are decidedly weak.

But if there be radium in solution, the storing up of emanation follows according to a specific law. If radium is dissolved, the rapidity of the formation of emanation increases in rate. At first the decay is in excess of the evolution of the gas, but gradually the amount evolved catches up, till in a month the amount formed is in equilibrium with the amount split up (decay); from this point on this balance is maintained.

Physiological Action. Naturally the action of emanation could be most readily and accurately studied in respect to its effect on metabolism and on the blood.

1. It increases the excretion of uric acid. An amount of .1 gm. *pro die* can be increased to 1 gm. It ensures uric acid's keeping its soluble form in the blood and thus prevents its precipitation. It promotes the absorption of that already deposited. It increases the secretion of urea and promotes metabolism, increases the respiratory quotient, increases amount of carbonic acid excreted.

It diminishes the viscosity of the blood through the improvement of metabolism and the diminished saturation of the blood with diverse material.

It produces a dilation of blood vessels through the excitation of vaso motor nerves.

Through the influence of the last two factors it effects a lowering of blood pressure, even as much as 20-30 mm. of mercury.

It improves digestive processes by activating ferments and stimulates the whole digestive tract by acting on the nerves of the intestines.

It produces diuresis.

It is a rapid tonic, showing its effect in a renewed vigor and *bien aise,* and in an increased body weight and appetite.

By it the blood is modified as to its constitution. A small dose (of a few thousand Maché units) will cause a hypoleucocytosis, but the diminution of leucocytes will not be permanent beyond a certain point. Sometimes there is a hyperleucocytosis (v. Noorden).

After an injection of radium the red corpuscles are found to increase at an astonishing rate, thus from 5,400,000 to 7,200,000 in half an hour and up to 13,000,000 in seven days.

Therapeutics. The scientific application of emanation to therapeutics has a very decided historical basis of support in the centuries-old fame of certain springs that have since been shown to depend for their virtues on the presence of radium emanation. Even among the mines it was known that workers did not have rheumatism, pitchblende sewed in a sack was a popular cure for headache, and the water a remedy for constipation. The red men in America worshipped the "spirit of the springs" and erected huts about them.

The reputation of the springs converged more particularly on gout and rheumatism, but left room, perhaps not less, for general effects on the system and for the repair of senility and sexual decline.

Since the responsibility for the cures has been laid at the doors of radium, the manner of using the water and emanation has been systematized to a point of high development, and as an outgrowth, clinics for the use of the emanation have been established in innumerable centres. This extension has enlisted the services of many gifted clinicians, so that in the six or eight years past much data has accumulated and results have been authenticated. The names of Gudzent, His, Falta and v. Noorden, v. Neisser, Klemperer, Lazarus, et al., form a galaxy, the brilliancy of which should leave no doubt in our minds of great results secured with radium emanation.

There need at least no doubt attach to the remarkable control of radium over gout and rheumatism, in its very varied manifestations. And it is to be remembered that here radium has been offered the task of conquering conditions that correspond rather well to the inoperable cancer. Rheumatoid arthritis, *e.g.* is a well nigh hopeless disease so far as other therapy is concerned, but many remarkable successes have crowned the use of radium. And so with other chronic joints and arthritises, with the exception of luetic and tubercular.

The nearer the joint is to the subacute stage, the more promise of success, especially if it is at the stage of effusion and periarticular edema; but very chronic joints will show vast improvement, if they have not passed into the stage of absorbed cartilage and organized fibrous tissue. "Before experience," says Klemperer, "I expressed myself as very skeptical of the reported successes of others, but now I can say that radium scores such success as does no other therapeutic measure, in rheumatism." Prof. Falta uses the emanation in acute cases even, and says it is to be preferred to the salicylates.

In gout and rheumatism a curious feature comes to light, viz., the reaction, *i.e.* what might be called the "touching up" through the radium; pain, swelling, fever appear or are emphasized. This must be looked for if doses of any size are used, and indeed it offers the means of "taking

the measure'' of a patient. Appearing, it is distinctly favorable in a prognostic light. On account of it, occasionally the treatment has to be interrupted; it appears at a variable time, two days to three weeks. Another phenomenon, ''late or postponed healing,'' was well known in the old days of the springs, before radium saw the light. It has to do probably with the presence in the body of the later members in the decay series — Radium D.-F. — which take months for splitting and the liberation of energy.

The action of radium on rheumatism may perhaps be referred to its bactericidal action, radium having a destructive effect on staphylococci and especially on gonococci (the emanation is especially effective in gonorrheal rheumatism), but its influence over metabolism, its autolytic and antiphlogistic action are not to be forgotten.

In muscular rheumatism and inflammatory conditions of muscle and fibrous tissue emanation acts favorably. A lumbago is relieved by a few doses.

In many nervous diseases emanation has been found very valuable. In all neuralgias connected with neuritis or with metabolism or having a uric acid, gouty, or diabetic foundation, radium emanation is a specific. In tabes, Wachsmann found only four out of nineteen cases not benefited as to pains, while, too, the crises were relieved.

In catarrh of the antrum and frontal sinuses Pick has reported remarkable improvement. So in chronic inflammatory conditions in general, as in the pelvis or the myocardium.

There is no doubt that radium emanation has a well defined soporific influence. This has been emphasized by many observers. It may, perhaps, be ascribed to its influence in widening the blood channels.

To the latter effect may be attributed its control of blood pressure. This ischaemic reaction makes it useful in vaso motor disturbances and constrictive states. In this line comes arteriosclerosis, for which the springs in earlier years had especial repute.

Because of increasing the red corpuscles and its pronounced tonic effect in general, emanation acts highly favorably in simple anemias. Cases, too, of pernicious anemias have been reported cured (one recently by Gudzent, although he intimates a relapse as quite possible).

In diabetes, where it has been much used, observations differ. No doubt its effect seems to reach the proportions of a cure in early cases in younger patients. If diabetes is caused by a deficiency or insufficiency of glycolytic ferments (and glycolytic ferments are well borne by diabetics) the coefficiency of emanation in glycolysis ought to be a factor of benefit. Sanbermann is enthusiastic over results in diabetes, and believes that failures are due to small doses (mentions as low as 10-100 M.U.). Mayer and Eichhorst have reported good results.

As a rejuvenator in senility and sexual decline, v. Noorden is especially friendly to radium; and before radium the baths were much resorted to for such influences.

Emanation certainly corrects many conditions of digestion, as intestinal fermentation; it is also laxative and a remedy for constipation.

Practical Use of Emanation. 1. By inhalation, emanation may be introduced into the system if the patient remains in a room the air of which is heavily charged with the gas. To this end large and costly emanatoria have been erected in connection with radio-active springs, with a reduced cubic space, appliances that care for the oxygen supply and the removal of carbonic acid and moisture (the patients are even electrically (neg.) charged to increase the amount of active deposit collecting on them); a further advantage of such an establishment is that every object about the buildings increases the total radio-activity, having acquired an induced radio-activity through the precipitation of secondary deposit.

2. Advantage may be taken of the law that dissolving a radium salt increases the liberation of emanation. The solution is aged until the emanation is in equilibrium with the radium, after which time the amount of emanation is constant and may be continuously used for inhalation—a current of (washed) air or oxygen being forced through the container and conducted out to be inhaled by any number of patients. This is the most appropriate form for a home-made emanatorium. The amount of radium should be perhaps 2 or 3 mgms. to each individual.

3. An individual inhaler may be arranged and installed in a small cabinet or booth. Here advantage might be taken of the law that, if heated, radium gives off its emanation more rapidly. Thus the solution of the radium salt may be boiled, the steam conducted into a container where, the steam being condensed, the emanation is left, to be inhaled.

4. Emanation by the bath resolves itself into emanation by inhalation. There is a small amount of absorption by the skin (Lazarus), though this point is vigorously disputed. A bath may be made radio-active by introducing an insoluble radium salt or residues containing radium. But it is far better (though more expensive) to add a solution of a radium salt, in which the maximum quantity of emanation has been developed by aging. The escaping emanation is to be inhaled, and to this end the cubic space of atmosphere should be made as small as possible. The active deposit on the body should not be wiped off.

5. Emanation *per os* may be in the form of water made artificially radio-active by contact with an insoluble radium salt. But this water is unstable, and the amount of emanation weakens rapidly. Hence it is far better and more dependable (but costlier) to age a solution of a

radium salt,—get the maximum quantity of emanation and make the dose certain.

Radium by Injection. A soluble salt of radium has been introduced into the system intravenously, in pretty large doses, even up to 1 mgm. The usual dose, however, has been 50-100 micrograms. It may be looked upon as the method of securing intensive or quick action. It offers, however, the advantages of slow radiation because a part of the radium is stored up as the insoluble sulphate in the bone marrow, where its slow and gradual decay makes possible a large and continued radiation of the system. No injurious effects have been noted from this sudden lodging of considerable amounts of radium within the system. The intravenous method has been recommended in anemias, but especially the pernicious form, in general arthritis, and in high blood pressure (which it will immediately reduce).

v. Noorden uses a weak solution (1 mmgm.) in the neighborhood of all joints affected by rheumatism; Czerny uses radio-active salt solution (contact with insoluble salts). Domenichi has injected 50-60 mmgms. into joint, drawing fluid off if necessary, with immediate relief of pain and marked improvement within five or six days. In eight cases of anemia, Ledoux-Lebarde has injected 20 mmgms. per week, with distinct improvement.

Czerny makes injections of insoluble salts into tumors—in this case the resorption of the radium is years in completing itself. Uranium oxide gr. xx-℥i in oil has been injected into the fistulous openings of secondary carcinoma, with healing of the case. Tuberculous fistulae discharging pus have been treated successfully with injections of radiferous water.

Radium Compresses. Fine linen mesh with an insoluble radium salt incorporated (*toile*) is used by the French for radiation purposes. If the amount of radium is large it will gradually destroy the fabric by making it fragile. For this a recent substitution of insoluble salts in asbestos has been proposed.

A small amount of a radium salt or a radium-bearing earth can be imprisoned in gauze and forms a very useful application after wetting. v. Noorden makes this application to all rheumatic joints—scrofulous glands have been so treated. Lazarus calls attention to the fact that most compresses on the market are weak. Gauze soaked in radiferous water makes a good application and may be used for dressing ulcerated surfaces, especially malignant. In tuberculosis both pulmonary and intestinal compresses have been used with marked effect. Eichholtz utilizes clysters of emanation water (the emanation is absorbed and excreted by lungs).

Radio-active Earth. Pitchblende residues have always been much used—even before their radium wealth was known. Sewed in a bag it was a remedy for headache.

Pitchblende is applied in ointment form to psoriasis. Even at this date Arendt prefers, for radiation of uterine cancer, pitchblende residue in a rubber finger cot and reports cases of cure (he prefers the slow radiation of the pitchblende, but also uses radium itself). Radio-active earth occurs naturally, as the well known Fango, found in Italy. With this, packs and local applications are made. So as a residue in mining, radio-active earth is left and contains a considerable per cent. of radium. This makes a most useful application. Mixed with boiling water to a paste, it is spread between gauze and used as a poultice; thus Christides reports a clinic of fifteen cases of pelvic inflammatory conditions in which the earth produced much improvement. It has also been used freely by the French, stirred up in a sitz bath or as a vaginal injection.

As to the theory of local action, we must look to the autolytic or anti-inflammatory action of the small amount of radium. London has reported an ulcer of the arm from radio-active cotton. And action on the terminal nerve filaments suggests itself.

Radium by Cataphoresis. Both the emanation and the active deposit collect on the negative pole—a person charged with negative electricity will gather a greater quantity of active deposit, when in contact with emanation. Knox has charged agar-agar plates with emanation, placed them on surface of a growth and produced a deeper penetration by ionization. This field seems to offer much chance of development. Knox suggests that later we may find substances which, when taken internally, may be made radio-active from the outside.

Thorium-x. Thorium emanation does not spring directly from mesothorium as radium emanation does from a radium salt, but is reached only after the interposition of the intermediate decay products radiothorium—thorium-x. The thorium emanation is given off by this last, and unlike radium emanation, is rare in nature. Strangely enough, however, it was used in medicine before radium emanation, for inhalation in tuberculosis.

Thorium emanation has a very short life, 54 seconds, about the duration of the blood cyclosis, therefore it is in practice not considered directly available for therapeutic purposes. Both Bickel and Lazarus deny that it can be detected in the blood after inhalation. On the contrary, Georgés has reported a clinic with its use, and favorable results after a year's experience.

Thorium-x, however, is a substance which, in solution, may be taken *per os* or introduced intravenously. It supplies a method of radiating the system, the body acting as an emanator, and the nascent emanation being liberated within the system.

But this brings up certain very important differences from the emanation of radium. Sixty-five per cent. of thorium-x can be recovered in the bone marrow and eighty per cent. of the emanation is retained within the body. It is, besides, excreted especially by the intestine.

There is thus the opportunity furnished, in the use of thorium-x, for a very intense radiation, likewise for a very slow and prolonged one. Radium emanation makes a quick passage of the cells because the active deposit (Radium A., B. and C.) takes only minutes in breaking up, while thorium emanation makes a slow passage because the decay products are days in breaking up.

The meaning of this is that thorium-x is intense and cumulative, where radium emanation is not. It may be said then that the activating therapeutic dose of thorium-x is much nearer the destructive toxic dose and that in working with it one is always along the edge of the precipice.

Very high doses of thorium-x have been used (stated as high as 3,000,000 M.U.) but deaths have been reported with hemorrhages into the bowel and internal organs, and a large number of observers warn against its dangers. Thus Georgés in using the emanation and contending (against the opinion of others) that results were highly satisfactory, bases his support of it on its lack of danger, in contrast with the great danger in use of thorium-x. Ledoux-Lebarde and Meseth, both users of it, advise great caution.

The great intensity of thorium-x makes for temptation in the wish to see immediate results. Thus in leukemias the white corpuscles can be enormously reduced in a few days even to nil, it is said (as also in animals, experimentally); and in the same way the red corpuscles can be extravagantly increased in pernicious anemias, but the same thing can be accomplished by radium in more deliberate fashion, and in a perfectly safe way. In a recent clinic, Gudzent, the foremost authority on emanation, in a comparison of radium emanation and thorium-x in gout and rheumatism, reports more favorably on radium and includes a case of pernicious anemia apparently healed by the radium.

Radium emanation, so entirely unique, seems then to offer an extensive addition to our therapeutic resources, and no better doxology could be made for it than that it fulfils the great requisite of *primum ne nocere*.

Clinical Department.

A FATAL CASE OF ENDOCARDITIS DUE TO A GRAM-STAINING FILAMENTOUS ORGANISM.

BY WILLIAM H. SMITH, M.D., BOSTON,

AND

OSCAR RICHARDSON, M.D., BOSTON.

A chauffeur, born in Holland, 32 years of age, with a negative family history, entered the Massachusetts General Hospital, October 19, 1911.

P. H. In 1906 he had rheumatic fever, lasting three months, while a second attack in 1907 confined him to the hospital for four months. The diagnosis at discharge read: "Acute articular rheumatism, subacute arthritis, mitral insufficiency, acute endocarditis, broncho-pneumonia, pleurisy with effusion, enlarged tonsils."

P. I. After leaving the hospital he was well until the early summer of 1911. He spent two years in a machine shop. Since then had had easy work as a chauffeur in winter, and engineer on his employer's yacht in the summer.

Early in the summer of 1911, he began to have dry cough and was easily fatigued. A week before entrance to the hospital, dyspnea became prominent, and this had steadily increased; the edema of the feet and ankles had also increased. For about four weeks orthopnea had been present. He was under observation until his death—a period of seventeen days. During this time he ran a continuous temperature, ranging from 99 to 100; occasionally in the evening reaching 101; his pulse was constantly rapid; from 110 to 120; his respirations ranging from 30 to 35. The heart was enlarged; evidence of endocarditis was present at the mitral and aortic valves. There was a constant leucocytosis present, the white count ranging from 10,600 to 20,500; a moderate secondary anemia persisted, the red cells varying from 2,690,000 to 3,200,000, and the hemoglobins 55% at entrance, reached 75%.

On two separate occasions atypical streptococci were isolated from the blood in pure culture—October 19 and October 29. His urine just before death showed a few granular casts with cells adherent.

The interest in the case lies in a study of the organism, an atypical streptococcus, isolated from the blood during life, and a study of this organism in sections of the fresh endocardial vegetations, and in sections of the spleen and kidneys, where emboli were found, postmortem.

The anatomical diagnosis is as follows:

Acute vegetative endocarditis, of the aortic and mitral valves.
Chronic fibrous endocarditis of the aortic and mitral valves.
Small aneurysmal dilatation of the aorta.
Chronic adhesive pericarditis.
Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Ascites.
Infarcts of spleen and kidney.
Chronic pleuritis.
Acute glomerulonephritis.
Septicemia (a filamentous microorganism).

Bacteriological Examination. The organism is a Gram-positive one and stains by the ordinary aniline dyes.

Morphology. Cultures 24 hours old or less on hydrocele-agar show chains of micrococci without capsules with a tendency toward diplo-formation. Some of the organisms resemble pneumococci except that they are much smaller. Cultures older than 24 hours show many pleumorphic forms including oval and apparently barred forms, together with chains of streptococci.

Cultural Characters. On hydrocele-agar there are minute round grayish-white colonies, very slightly moist. Cultures on gelatine or blood serum are similar to those on hydrocele-agar. It does not

PLATE 1. Twenty-four Hour Growth on Plain Agar.

PLATE 2. Forty-eight Hour Growth from Spleen. Hydrocele Agar. x 1500.

PLATE 3. Valve Vegetations.

sachusetts General Hospital, October 19, 1911.

similar to those on hydrocele agar. It does not

liquify gelatine. It coagulates milk without gas formation or peptonization.

Carbo-hydrate Reaction. There is no growth on potato. Culture in His's serum water to which lactose, salicin, saccharose, dextrose, mannite, raffinose and inulin are added, show no gas formation in any of these carbo-hydrates but an acid formation in lactose, salicin, saccharose and dextrose.

Hemolysis. Cultures on glucose-agar to which human corpuscles have been added show no hemolysis, even after five-days' incubation, but a gradually increasing dirty greenish zone surrounding the colonies.

Microscopical Examination. Vegetations on heart valve. Masses of fibrinoid material infiltrated by leucocytes and some red blood corpuscles are present; also masses of an irregular Gram-staining filamentous micro-organism presenting spindle-shaped thickenings in some instances.

Spleen. An infarcted area is present. Groups of filamentous irregularly Gram-staining micro-organisms are present. There is hyaline degeneration in and about the follicles.

Kidney. An infarcted area is present. The glomeruli generally show proliferation of their endothelium and some infiltration of polynuclear leucocytes. Small masses of filamentous irregularly Gram-staining micro-organisms are present. In certain of the glomeruli and capillaries they are also found.

In sections of the heart vegetations, spleen, and kidney, this organism apparently is surrounded by a capsule.

We wish to acknowledge the interest in this case of Dr. James H. Wright, and we would express our appreciation to Mr. L. S. Brown for the photographs accompanying the article.

Reports of Societies.

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MAY 5, 1913.

(*Continued from page* 173.)

RELATION BETWEEN NON-PROTEIN NITROGEN RETENTION AND PHENOLSULPHONEPHTHALEIN EXCRETION IN EXPERIMENTAL URANIUM NEPHRITIS.

DRS. O. FOLIN, W. DENIS, R. FITZ and C. FROTHINGHAM, JR., Boston.

In this work Folin and Denis' method for detecting the amount of non-protein nitrogen and urea in the blood was used. The method is accurate and simple and only requires 2 c.c. of blood. The phenolsulphonephthalein test was done as recommended by Rowntree and Fitz in their experimental work with this and other tests. An acute nephritis was produced in rabbits by uranium nitrate injection subcutaneously and the two tests studied at different stages of the nephritis.

From these experiments it became evident that both these tests for renal function went hand in hand in a general way with the pathological condition in the kidney and with the tests for albumen and casts in the urine.

The phenolsulphonephthalein test is an indication of the renal efficiency at the moment. As the non-protein nitrogen in the blood accumulates gradually the amount of retention is not indicative of the renal function at the moment unless the history of the case is taken into consideration.

DISCUSSION.

DR. W. T. LONGCOPE, New York: How was the urine from the rabbits obtained?

DR. CHANNING FROTHINGHAM, JR., Boston: By milking the bladder.

DR. S. J. MELTZER, New York: What was the daily amount of urine in these animals? Was it comparable to the normal output? What kind and amount of food was given?

DR. H. O. MOSENTHAL, New York: It seems possible to interpret the increase in non-protein nitrogen retention as an expression of increase of protein destruction, as well as of renal insufficiency.

DR. W. S. THAYER, Baltimore: The introduction of a method by which we may estimate the extent of renal insufficiency is of great importance from a prognostic standpoint. Where, in those cases of impending uremia, we can demonstrate a high percentage of non-coagulable protein in the blood, the prognosis is very grave.

Discussion closed.

DR. C. FROTHINGHAM, JR., Boston: The experimental rabbits were frequently anuric during periods of high nitrogen retention.

The same food was given all of the rabbits; it consisted of hay and 100 grams of carrots; the rabbits would not always eat all of the carrots.

I do not know the source of non-protein nitrogen, but its increase in the blood seems very definitely to be due to renal insufficiency.

I believe that the estimation of the blood content of retained nitrogen is going to prove of greater value for prognosis than the phenolsulphonephthalein test, inasmuch as the latter test gives reliable information only for the moment.

THE OCCURRENCE OF NUCLEAR PARTICLES IN THE ERYTHROCYTES FOLLOWING SPLENECTOMY.

DR. ROGER S. MORRIS, Clifton Springs, N. Y.

The blood findings in four patients following splenectomy were reported. It was found that in all four cases examined, nuclear particles were present to a greater or less extent in the erythrocytes. The greatest number found was apparently in a patient thirteen days after removal of the spleen. At this time one hundred and thirty red cells with nuclear particles were found in counting five hundred white blood cells. In a second patient, on the fifth day after operation, there were found twenty red cells with nuclear particles in counting five hundred leukocytes. The two remaining cases were apparently intermediate between these. In one the operation had been done several years previously. In the other, the exact date of operation was not known, but it was said to be a recent case. As the examinations were made on specimens which had been collected for another purpose and as leukocyte counts were not made on the days that the smears were prepared, it has been impossible to calculate

the absolute number of red cells per cubic millimeter which contained nuclear particles. A few normoblasts were found in all four cases.

Roth has reported a remarkable case in which large numbers of nuclear particles were found in the blood three years following splenectomy. Schur in 1908 reported similar findings in a patient who died with pernicious anemia and in whom there was complete atrophy of the spleen.

The nuclear particles are so inconspicuous that they are easily missed in making the usual differential count. To find them when only a few are present, it is necessary to move the slide very slowly, and it is of advantage to use an Ehrlich's diaphragm.

While the number of cases studied is very small it seems possible that the changes described may be a fairly constant feature of the blood of patients who are deprived of their spleen, either through operation or by atrophy of the organ. The findings also suggest an intimate physiological relationship between the spleen and normal hematopoiesis.

The presence of nuclear particles and normoblasts with a normal red count, as in Roth's case, is unusual.

It has been possible to reproduce these findings in splenectomized rabbits. The number of observations is at present too small to determine whether or not the change is a constant one.

DISCUSSION.

DR. W. T. LONGCOPE, New York: With reference to the presence of nucleated reds with a normal count, it is a fact that in cases of lead poisoning there are always to be found nucleated red cells in the absence of anemia.

In the case of two children with cyanosis from cardiac disease, I have found nucleated red cells while the red count was 6,000,000 and the hemoglobin was 90% and 95%.

DR. W. S. THAYER, Baltimore: In this connection it may be of interest to cite a case seen with Dr. Miller, of Baltimore. This was a colored boy with an unaccountable chronic leg ulcer; there was some anemia from time to time; the blood contained nucleated red cells, some of which were marked by chromatic dots. The spleen was not demonstrable by any of the methods of physical examination.

Discussion closed.

DR. ROGER S. MORRIS, Clifton Springs, N. Y.: I am much interested in Dr. Longcope's remarks on lead poisoning; I was not aware of the presence of normoblasts in such cases.

In the cases of cyanosis in which nucleated cells were found, the explanation is probably to be found in the concurrent polycythemia.

Dr. Thayer's case is of great interest in this connection.

ABSTRACT.

SALVARSAN IN PERNICIOUS ANEMIA.

DR. THOMAS R. BOGGS, Baltimore.

The conflicting report on the use of this drug in the treatment of pernicious anemia justifies a brief summary of personal experience and review of the more important previous reports.

Leede's unfavorable results were probably due to beginning too late.

Bramwell's reports have been encouraging.

In our experience with small doses at intervals of four weeks we have seen no unfavorable result attributable to the drug, and some remarkable apparent cures in patients who did not respond to other forms of arsenic.

The experience at the Johns Hopkins Hospital, while the study was less complete does not show any bad results attributable to the use of salvarsan. It is important that this drug be tried promptly in this disease, and especial attention paid:

(a) To the question of syphilis in the patient.
(b) Influence of salvarsan when given alone.
(c) The effect on arsenic-refractory cases.
(d) Permanence of the results.

DISCUSSION.

DR. JOS. L. MILLER, Chicago: I entertain, perhaps, unwarranted pessimism as to any real improvement in pernicious anemia, especially when I have so often seen periods of very marked improvement appear independent of therapy. My experience is that when improvement takes place during the administration of arsenic, thorium, or anything else, a relapse may be expected and when it appears the remedy which was supposed to be responsible for the improvement has no further good effect.

DR. I. ADLER, New York: I must confess to agreeing with Dr. Miller. I have for many years observed a great number of cases of pernicious anemia, and I believe that if such cases are observed long enough it will be found that they are never cured.

I remember one case in which improvement, almost to normal, occurred and was sustained for three years, when the inevitable relapse appeared. No therapy really affects the underlying cause of pernicious anemia, whatever it may be. Those cases that are refractory to arsenic are generally those that can no more be helped by anything.

DR. S. J. MELTZER, New York: May not the effect of salvarsan in pernicious anemia be merely that of stimulation of the formation of red blood cells?

Whatever the mode of action, certainly an increase of red cells from 500,000 to 5,000,000 under exact laboratory observation, indicates a very unusual degree of success in the treatment of these cases, at least. We are all familiar with the type of observations made by Dr. Miller and Dr. Adler, and some of us are old enough to realize the fallacy of depending upon mere therapeutic observations; but Dr. Boggs' studies were controlled by exact laboratory observations and should command thoughtful attention.

DR. H. F. SWIFT, New York: With respect to febrile reactions, much stress was laid upon this feature of salvarsan therapy in the early Hamburg reports, and at that time such reactions were very frequent. But with improved technic of administration, most of these cases can be ruled out now. We have had one syphilitic patient, however, who is persistently fibrile after salvarsan administered with the most careful technic.

DR. J. A. CAPPS, Chicago: The mere fact of the improvement of Dr. Boggs' patients is not so impressive as the fact of the rapidity of the blood regeneration. In most cases the improvement is more gradual; as, for instance, in one of my cases in which the red count rose from 1,000,000 to 4,000,000 after normal salt by rectum, but in which this improvement required two months' time. I can recall

no treatment comparable in rapid results to the method employed by Dr. Boggs.

I would like to ask Dr. Boggs in what proportion of his cases was a syphilitic history obtained?

DR. J. H. PRATT, Boston: Naegeli has found that since the introduction of arsenic in the treatment of pernicious anemia, relapses are much more common. This may mean that improvement is more often noted after arsenic therapy.

DR. W. S. THAYER, Baltimore: We should hardly take Dr. Boggs to mean that he regards salvarsan as a cure for pernicious anemia. He seems merely to be presenting some very striking results obtained by giving this drug in this disease. What was the size of the dose given? Possibly the fear of febrile reactions deterred him from giving large enough doses. If there is any underlying protozoal cause for pernicious anemia, the use of a lethal dose of the drug is important.

DR. T. R. BOGGS, Baltimore: It was not at all my intention to announce a cure for pernicious anemia. The work was undertaken and the results were reported because we so easily get into the habit of letting these chronic conditions alone. I was impressed by the rapid blood regeneration possible in this particular chronic disease, and the cases seem to point out that we are not entirely helpless even when confronted by extreme grades of pernicious anemia.

The dose employed was 0.30 gm. of old salvarsan. All of the patients had febrile reactions and they were rather more severe than one encountered in the treatment of syphilitics. In the very sickest patient the temperature rose to 104° F. and his condition was desperate for a time.

In my own four cases there was no evidence of lues; in the eleven cases from the Hopkins, two were luetic, one having a very severe blood depression and dying in 72 hours.

INTESTINAL SAND. REPORT OF A CASE WITH CHEMICAL ANALYSIS OF SAND.

DR. FRITZ B. TALBOT, Boston:

The writer reported a case in which true intestinal sand appeared in the feces at frequent intervals always associated with digestive symptoms. Unlike the case of Myer and Cook (*Am. Jour. of Med. Sciences*, 1909, Vol. cxxxvii, p. 383), the sand had no connection with the bananas in the food.

The chemical composition was as follows:

Nitrogen	3%
Total fat	5%
Ash	17.4%
Calcium	7.4%
Magnesium	2.0%
Phosphates	present
Material soluble in alcohol after hydrolysis (resinous?)	14%

No discussion.

SOME EFFECTS OF REPEATED ANAPHYLACTIC SHOCKS IN ANIMALS.

DR. WARFIELD T. LONGCOPE, New York.

The experiments were planned to determine if changes in the parenchymatous organs and particularly the kidneys, could be produced in animals by injecting repeatedly in sensitized subjects sublethal doses of foreign protein. Guinea-pigs, rabbits, cats and dogs were used in these experiments. Egg white and horse serum were employed as foreign proteins. Three weeks after sensitization guinea-pigs were inoculated repeatedly intraperitoneally, rabbits intraperitoneally and intravenously and cats and dogs intravenously, at periods of four days to three weeks. In some instances as many as 12 to 14 inoculations were made. After repeated inoculations the kidneys both of dogs and rabbits showed well marked changes consisting in necrosis of the cells of the collecting tubules and loops of Henle with varying degrees of patchy cellular infiltration in the interstitial tissue extending from the mid zone to the cortex. In the animals that survived longest, the cellular infiltration was accompanied by an increase of connective tissue with atrophy of tubules and thickening of the glomerular capsules. In the livers of rabbits and cats there occurred necrosis of liver cells varying in size from the space occupied by a few cells to large portions of the lobule. These were most marked in rabbits. They were usually situated in the periportal zone but occasionally involved the mid zone of the lobule. Together with these areas of necrosis about which the capillaries were open, there was extensive infiltration of small round cells with later new formation of connective tissue in the portal spaces, leading in advanced cases to a picture resembling somewhat a portal cirrhosis in man.

In the guinea-pigs no extensive lesions were found in either liver or kidneys.

These experiments show that repeated anaphylactic shocks give rise in dogs and rabbits to varying degrees of acute and chronic interstitial nephritis, and in rabbits and cats to changes in the liver that result in a moderate degree of portal cirrhosis.

DISCUSSION.

DR. H. A. CHRISTIAN, Boston: As to the possibility that the lesions described by Dr. Longcope may have been spontaneous in origin, from the description of the liver lesions, I do not think it very likely that they were spontaneous.

In my own work with rabbit livers, it is rare to meet with lesions, except in coccidial livers, where the changes are more like hemochromatogenous hepatitis.

It is more difficult to answer the question as regards the kidney, but it may be decided for practical purposes by studying the kidneys of control rabbits from the same stock.

DR. I. ADLER, New York: A number of years ago, I fed chickens exclusively with meat and found lesions in the liver identical with those found by Dr. Longcope in the livers of his rabbits.

DR. C. FROTHINGHAM, JR., Boston: What does Dr. Longcope regard as the primary lesion in the kidney? Is it vascular, parenchymatous, or interstitial?

DR. E. C. ROSENOW, Chicago: Were the rabbits studied by Dr. Longcope old or young? I have found that spontaneous nephritis is very rare in young rabbits.

Discussion closed.

DR. W. T. LONGCOPE, New York: In reply to Dr. Christian's remarks, I would say that I have studied control rabbits from the same stock, and have not found spontaneous kidney lesions; but I have felt that the evidence was not conclusive.

I am not certain where the primary lesion takes place, but I believe the first charges are to be found

in the walls of the capillaries and in the tubular epithelium.

The rabbits used in the experiments were young animals weighing from 1000 to 1500 grams.

Dr. Adler's remarks were interesting and his work was evidently confirmatory of my own.

STREPTOCOCCUS ANAPHYLATOXIN AND HYPERSENSITIZATION OF RABBITS, AND GUINEA-PIGS TO VARIOUS STRAINS OF STREPTOCOCCI.

DR. GEORGE DRAPER.

The object of the investigation was, first to produce an anaphylatoxin from various strains of streptococci and then to produce hypersensitive states in rabbits and guinea-pigs with streptococci.

By using old broth cultures, anaphylatoxins were produced with regularity. The centrifugates of large quantities of the culture were left in contact with fresh guinea-pig serum at room temperature for 24 hours, and the supernatant serum of this mixture, after centrifugation (about 4 cc.) were injected into the jugular vein of a guinea-pig. Typical anaphylactic shock and death in from two to five minutes with typical autopsy findings occurred in all cases in which the above technic was used.

In the hypersensitization experiments the animals were given two or three sensitizing doses—the guinea-pigs, intraperitoneally; the rabbits intravenously—of streptococci heated to 60 for one-half an hour. The amounts varied from the contrifugate of 10 cc. broth culture to 0.05—0.1 gm. (by volume as shown by graduate centrifuge tubes). The streptococci were thoroughly washed in salt solution before injection. Three weeks or more after the last dose the rabbits were given 0.1 to 0.3 gm. intravenously. There were marked symptoms in several cases and death in two. The symptoms had certain suggestive characteristics of anaphylactic shock in rabbits but were not typical. They were severe, however, and similar in all the experiments.

The guinea-pigs had typical anaphylactic symptoms but death was not produced.

There are now in progress control experiments of the phenomena described in guinea-pigs and experiments with the rabbits that have survived the previous injections of large quantities of killed streptococci to determine whether they have been rendered more susceptible to infection with the living organism.

BESREDKA'S METHOD OF PREVENTING ANAPHYLACTIC SHOCK.

DR. R. WEIL, New York:

It is well known that sensitized animals, which have received a sublethal dose of antigen, become anti-anaphylactic. Besredka, therefore, suggested that human beings in whom there was a possibility of previous sensitization should receive a small dose of antigen, previous to the therapeutic injection. The question arises whether Besredka's generalization is justifiable. His results were based on experiments on guinea-pigs, which had received very minute fractional doses of serum to sensitize. He stated that larger primary doses do not sensitize but immunize. As has been described in another article, however, the vast majority of immunized animals may be shown to be typically anaphylactic, provided the intravenous route is employed for the toxic injection. The problem, therefore, narrows itself down to the question whether guinea-pigs sensitized by large doses are rendered anti-anaphylactic by the administration of an intermediate, relatively small, injection of antigen. It was demonstrated by means of experiments both on actively and on passively sensitized guinea-pigs that this is absolutely not the case. In fact, such animals may be given an intermediate injection of antigen which would suffice to kill control animals sensitized by small doses, and still remain anaphylactic. Under certain conditions, they may be even more highly anaphylactic than before. It follows that the intermediate prophylactic injection cannot in sensitized guinea-pigs be calculated in such a manner as to render the animal anti-anaphylactic, unless the degree of sensitization, and the corresponding minimal lethal dose, be accurately known. In human beings, such information is, of course, impossible, and the Besredka method is consequently always unreliable, and at times even dangerous. A case report from the French literature is cited, in which the B. method was employed in a human being, and the subsequent therapeutic injection produced anaphylaxis and threatening death.

DISCUSSION.

DR. R. I. COLE, New York. Does the time relation affect the results?

DR. W. T. LONGCOPE, New York: I have observed about the same phenomena when giving serum intraperitoneally or subcutaneously; at the same time, intravenous injections of rather large doses would produce symptoms. Has Dr. Weil used repeated intravenous injections? I have observed also that repeated small doses will finally produce symptoms.

Discussion closed.

DR. R. WEIL, New York: The period of desensitization does not exceed eight days. In active anaphylactic sensitization the time period has not been worked out. As far as guinea-pigs are concerned sensitization lasts for life.

In reply to Dr. Longcope's question, a moderate degree of protection can be induced for intravenous injections, but it is not absolute.

If in rabbits serum is given every day, there will be no symptoms; if, however, an interval of three or four days is allowed, accidents will thereafter occur.

STUDIES ON THE INCUBATION PERIOD.

No. 2 Concerning Virulent and Avirulent Cow-pox Vaccine.

DR. DAVID MURRAY COWIE, Ann Arbor: In a preceding study of the Incubation Period (No. 1) the clinical phenomena following the injection of horse serum were considered. (Serum sickness.) The present study has to do with similar or analogous phenomena following the introduction of cow-pox vaccine into the body in various ways.

The usual phenomena following the ordinary cutaneous vaccination in the unvaccinated and revaccinated are well known. Theoretically we might expect an earlier take in a revaccine if any take should occur, and experience teaches us in a great many instances this is so. A point that has not been generally recognized is that within 24 to 36 hours after the introduction of living cow-pox

lymph into the skin of an individual previously successfully vaccinated a certain degree of hyperemia results, but does not so result after a primary vaccination and that during the incubation period of a primary vaccination and preceding the development of the papilla a similar hyperemia may be obtained by introducing fresh vaccine into the skin. This we have every reason to believe is an allergic phenomenon and shows that the entire organism has responded to the initial injection.

Virulent cow-pox lymph may be injected in low dilution into or beneath the skin in appreciable amount without inducing general symptoms. Subcutaneously the deep infiltration felt after injection continues for a few days, then gradually disappears. Within 24 hours the body becomes allergic. Intradermal injections are followed in a few hours by hyperemia and nodular formation which persist for many days. The body likewise becomes allergic within 24 hours. Reinjection in either case is accompanied by an almost immediate response. Children subsequently vaccinated by the cutaneous method in the majority of instances fail to react with papilla or pustular formation.

The phenomena following similar injections of avirulent (dead) lymph react differently. This difference seems to be one of degree up to a certain point. High dilutions of lymph from 1-100 to 1-1000 induce the allergic state (but allergy seems to be attained more gradually.) Intradermal injection leaves no nodular formation in the majority of instances. (This depends to a certain extent upon the physical state of the lymph.) No cutaneous reaction follows these primary injections (excepting with very concentrated solutions, when a reaction occurs within 24 hours); re-injection of high dilutions intradermally is followed on the third and fourth day by a cutaneous reaction analogous to the cutaneous tuberculin reaction. The larger the initial injection the surer the subsequent cutaneous reaction. Following successive inoculations of avirulent lymph, in proportion to the total amount injected, up to a certain point, a greater cutaneous reaction occurs. This is analogous to successive horse serum injections. However, all points do not light up as in successive cutaneous vaccination and horse serum injections. No febrile reaction follows the first injection of avirulent lymph in the unvaccinated. On the other hand, if an individual previously successfully vaccinated is given a subcutaneous injection of dead lymph, of certain concentration, he may react with fever, local hyperemia, and nodular formation within 16 hours.

An individual once successfully vaccinated is apparently permanently allergic. That is, he will always react without question to an intradermal injection of diluted avirulent lymph (21 years). An unvaccinated individual who contracts smallpox reacts quickly to an intradermal injection of diluted avirulent cow-pox lymph. The reaction is usually first seen early, within 5 to 10 hours, and may fade quickly. This shows the phylogenetic relationship of smallpox and cow-pox.

From these observations it will be seen that sensitization to virulent cow-pox vaccine is a quick affair, a matter of hours, not days, as in tuberculosis and serum disease; that a greater reaction seems to obtain after a pronounced cutaneous vaccination. Such cases may react in fractions of an hour after an intradermal of 1-100 avirulent lymph.

The infiltration of the tissues of the arm following cutaneous vaccination, revaccination, and reinjection of living or dead lymph is an allergic phenomenon and is analogous to the specific edema of v. Pirquet in serum disease.

Children who have never been vaccinated may be rendered immune to cutaneous vaccination with virulent cow-pox lymph by subcutaneous and subepidermoidal injection of avirulent lymph. In cases which do react after such immunization the subsequent course of the cutaneous vaccination is attenuated.

The incubation period of cow-pox disease is characterized by a very short preallergic stage as compared with serum disease and as recognized by the intradermal test.

In this brief abstract space does not permit of proper reference to the early workers with cow-pox lymph, or of the more recent and highly meritorious work of Knöpfelmacher, v. Pirquet, Hamburger, and their co-workers.

No discussion.

(To be continued.)

Book Reviews.

Geschichte der Ohrenheilkunde. von DR. ADAM POLITZER. Zwei Bände. II Bande. von 1850-1911. Unter Mitwirkung Bewährter Fachkräfte. Mit 29 Bildnissen auf 29 Tafeln. Stuttgart: Verlag von Ferdinad Enke. 1913.

Politzer finishes a monumental career with a most fitting and monumental work,—his "History of Diseases of the Ear." The second volume of this work, a book of 484 pages, has lately appeared. It is divided into two parts, the first dealing with the important advances in the anatomy, physiology and pathology of the ear, from 1850 to 1911, and the second division with the history of the development of otology in the different countries of the world. The text is made up of monographs by various well-known men. The portraits of many of the pioneers in otology are introduced. The history of otology in England is written by Hunt, Birkett writes of Canada, and Blake of the United States.

It cannot fail to be a matter of pride to Americans that the volume is dedicated to Boston and New York, that is, to Professor Clarence J. Blake and Professor Gorham Bacon. The book is practically an encyclopedia of otology, scientific and historical. For years it should hold first place as a reference book. It is hard to see how anyone writing a scientific paper can afford not to consult it in substantiating his data.

The collaborators have been very generous in mentioning their confrères. This is especially true of the United States. In one instance, at least, this good will was carried so far as to give one man a title which fate has not bestowed upon him. The writer hopes that this may be prophetic.

The book is beautifully printed on fine paper. The second part might be called the "Who's Who," or the Blue Book of Otology.

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A DECENNIUM OF PROGRESS.

THE November *Bulletin* of the National Child Labor Committee reviews a decade of work to free children from labor in factories, mines and shops. The finest optimism is that which persists in being optimistic despite the greatest temptations and justifications to adopt a pessimistic view of civilization. This committee's experiences would have justified the latter viewpoint, yet its report breathes throughout a confident and optimistic spirit. Much practical accomplishment is recorded, both in legislation and in factory reform; and a summary of child labor legislation shows a much longer list of laws secured than of defeats.

"The committee, organized ten years ago for a short and sharp campaign against child labor, has had to face much disillusionment. Idealists who supposed that if the people realized the truth about child labor they would forthwith abolish it, have learned that public knowledge is not sufficient until it is fired with enthusiasm and guided by active leadership. The National Child Labor Committee has grown in membership and efficiency, and it has been able to advance with ever-increasing momentum against the phalanx of tradition, indifference and greed. But the short and sharp campaign is lengthening into a twenty years' war. However, so long as we continue to have the loyal coöperation of our members, we know that there will be an end to the war, a joyful day when the committee will celebrate its anniversary, not by an appeal for doubling the membership, but by permanently disbanding the forces. Meantime, that day is far distant, and we most earnestly call to the attention of our readers the celebration of our tenth anniversary."

The committee's two most notable achievements are: the adoption of a children's code in Ohio, fixing a minimum age limit for employment at fifteen years for boys and sixteen years for girls; and the enactment of a law in Massachusetts limiting the hours of labor for children under sixteen to eight per day. Massachusetts is the first commonwealth in the world with cotton textiles as a leading manufacture to set so high a standard. The law was strongly opposed, and the factory owners have been threatening to repeal it. The results of such a law have shown that none of the bad effects on industry and public welfare always predicted by opponents have followed. On the other hand, in the North Carolina cotton mill communities, the school attendance is always lower than in the rural or even the mountain districts.

In looking forward to the tenth anniversary (April 14, 1914) the committee records that the child labor laws of all states except two have been improved; that exact knowledge of the condition of working children has been established, together with a recognized standard of protection; and that the federal government has in successful operation the Children's Bureau. The committee has increased to 7500 members, thirty-five state and local committees have been organized, the necessary expenses have exceeded $60,000, and the printed matter issued has increased from a few leaflets to over 6,000,000 pages.

This committee considers that its greatest work lies ahead; abolition of fourteen-year age limit exemptions for poor children, closing the street trades to boys under fourteen and girls under eighteen; a sixteen year limit for dangerous occupations, and an eighteen year limit for extra hazardous occupations; to twenty-one year limit for boys called on to face the moral dangers of night messenger service; higher standards for proof of the requirements under child labor laws; regulation of hours of work for all minors and medical inspection for them (services rendered by no state in the union at present); broader public discussion of the need for a general sixteen year age limit; the education of children excluded from school to meet

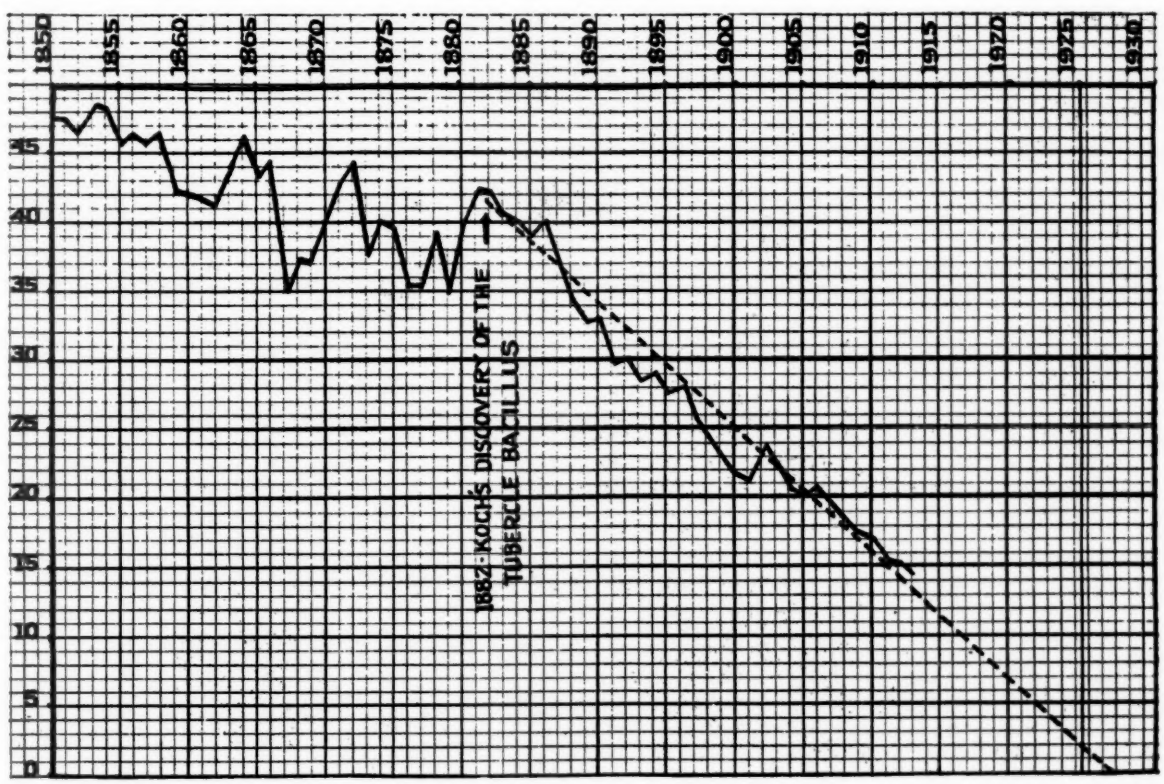
the demands of an industrial age—such are some of the things the committee has set itself to work out.

The report closes with an appeal that by the anniversary day the members shall put the committee on a working basis of 100 guarantors, 1000 sustaining members, and 10,000 associate members.

BOSTON'S TUBERCULOSIS DEATH-RATE DECREASING RAPIDLY.

THE death-rate from tuberculosis in Boston has very rapidly decreased since 1882. This is graphically shown by a chart which appears in the tenth annual report of the Boston Association for the Relief and Control of Tuberculosis. This chart discloses the fact that from 1850 to 1882, 32 years, the death-rate from tuberculosis decreased only from 47⅛ to 42, or 5½ points per 10,000 inhabitants. The following 31 years, 1882 to 1913, the death-rate from tuberculosis decreased very rapidly, from 42 to 15, or 27 points. This rapid decrease in the second period is partly accounted for by the fact that in 1882 Dr. Robert Koch, discovered the tuberculosis germ. Before this time the cause of the disease was unknown, but as soon as discovered it was possible to take proper steps to suppress it by the establishment of hospitals and through vigorous educational campaigns. The organization of the Boston Association for the Relief and Control of Tuberculosis in 1903 and the establishment of the Boston Consumptives' Hospital Department in 1906 further assisted in reducing the death-rate.

The report further tells of the effort of the association to induce the city council to favor the appropriation of $125,000 for additional accommodations at the consumptives' hospital, recommended by the mayor and the consumptives' hospital department. This appropriation has since been passed. Other matters the association is interested in are the further extension of open-air schoolrooms throughout the city, the more general use of the night clinic at the consumptives' dispensary on Burroughs Place for those at work through the day who would like to be examined. Several legislative bills affecting tuberculosis and health, as well as the hearings conducted by the recess committee on tuberculosis, received considerable attention from



BOSTON TUBERCULOSIS CURVE.
Broken line indicates the number of deaths per 10,000 of population from Pulmonary Tuberculosis (Consumption).
Dotted line indicates the rate of decrease since 1882 continuing into the future.

the association. Experiments in domestic science and following up patients discharged from sanatoria and hospitals were carried on during the year.

The educational work was conducted by means of an exhibit, a part of a large health exhibit sent to different cities in the state under the auspices of the State Board of Health; the distribution of 171,000 pieces of literature to school children, night schools and at motion picture theatres; and by 352 illustrated lectures, 323 of which were given in 36 motion picture theatres of the city. These lectures were given to a total of about 148,500 persons. At Prendergast Camp a total of 61 patients were cared for during the year.

The expense of the association for the year amounted to $16,661.48. The expenses for the coming year may be greater, as the association has consented to finance, at least for the present, the Massachusetts Anti-Tuberculosis League, a state society the association took an active part in organizing this month. It is hoped that this league of the 35 societies in the state, fighting tuberculosis, will further assist in reducing the death-rate from this preventable disease.

THE DANGERS THAT ATTEND THE USE OF FUNCTIONAL TESTS, ALONE, IN MENTAL EFFICIENCY.

EVEN now that the newer psychology has opened a broad and promising therapeutic field, some physicians and many laymen are still attempting to account for, and perhaps correct, delinquency in offenders by determining their intellectual limitations (and afterward instructing) by cock sure tests, losing sight oftentimes of the fact that when the long hidden, and now subconscious, traumata of earlier life are unearthed and dispelled, the tendency toward crime may disappear, and more than this, the intellectual ability itself frequently improves and grows to a point that no one considered possible. The latter point has been demonstrated recently by Sprague and others of the Public Health Service in their work at Ellis Island. It is not to be wondered at then that women incarcerated for social sins, on whom a Binet test has been done with the result that they have been called "seven years old mentally." do test out this way, and that they return almost immediately to the old life from whence they came, especially when no attempt at analysis has been made.

It must be evident to all then that in any work with defectives some attempt should be made to get acquainted with the individual himself, and to learn the stimuli and complexes that go to make him exactly what he is, and further than this, to know how and why he differs from those who have apparently been exposed to a similar set of circumstances during the developmental period of their own lives. To express this more definitely, find out what experiences he had that the others may not have had, and which one or ones had the strongest effect on him and which relate to the intricacies of the present trouble.

With these suggestions in view it must be apparent that the study of defectives is an infinitely complex problem, and not one to be delegated to workers with mechanical tests, who have no knowledge of modern psychiatry, although performance tests are instruments of immense value when they are in the hands of people who are qualified to use them intelligently.

Many of us, I believe, look upon deficiency in most cases as being due at least to tangible physical conditions with consequent organic or toxic processes, whereas it may be due in a given case to states existing purely and solely in the psyche, and these, being caused by impressional stimuli having a peculiar and intense affective value for that particular individual, may have been at the bottom of the whole trouble, and until the exact percept can be disclosed but little progress will be made toward a successful termination of the case.

Another danger is sometimes encountered in the shape of those more or less transient disorders that arise as a result of recent psychic shock, such as incidents of an unpleasant nature, during which the individual may be able to do but little that requires slightly complex mentation. This shock is to the conscious mind what the repressed one is to the subconscious mind, and the psychogenic excitements and depressions are to the former as the hysterias, psychasthenias, neurasthenias, and minor neuroses are to the latter.

The lesson to be learned, therefore, is that the final disposition of all defectives, delinquent and otherwise, should be made on the advice of psychiatrists as well as psychologists, or, if necessary, a combination of both in one.

MEDICAL NOTES.

TREATMENT OF TUBERCULOSIS BY INDUCED PNEUMOTHORAX.—Dr. Martin F. Sloan has been engaged as expert for three months to introduce the treatment of pulmonary tuberculosis by induced pneumothorax at the United States Public Health Service Sanatorium at Fort Stanton, New Mexico. Dr. Sloan is a graduate of Johns Hopkins Medical School, 1908, and since graduation has been on the staff of that institution as assistant in medicine. He is also on the staff of the Phipps Tuberculosis Dispensary, from which clinic he selects most of the patients for Eudowood Sanatorium (Hospital for the Consumptives of Maryland, Towson, Md.), of which institution he has been superintendent for the last four years. Eudowood will be remembered as the first institution in this country to establish a farm colony for convalescents and introduce graduated exercise as a therapeutic measure. Induced pneumothorax was introduced at Eudowood by Dr. Sloan in 1911 with an apparatus of his own, which is a modification of Saughman's. The Public Health Service Sanatorium at Fort Stanton offers an admirable field for the employment of induced pneumothorax because of the large number of far advanced cases and the opportunity which the government affords to retain under treatment beneficiaries who are disabled by their disease for a long period of time. Of the 200 patients under treatment, all adult males, thirty have been selected as suitable cases for treatment by this method. Dr. Sloan's engagement with the Public Health Service terminates March 1, when he will rejoin his sanatorium at Towson, Md.

SMALLPOX IN TEXAS.—Report from El Paso, Tex., on Jan. 23 states that several cases of smallpox have been recently discovered among Mexican refugees from Ojiuja. The patients have been isolated, and all sightseers excluded.

STATE HOSPITAL FOR PELLAGRA.—It was announced on Jan. 28 that a state hospital for the treatment and study of pellagra is to be established at Columbia, S. C.

GIFT TO WASHINGTON UNIVERSITY MEDICAL SCHOOL.—The General Education Board has recently announced a gift of $750,000 to the medical school of Washington University, St. Louis.

VIRGINIA CENTRAL STATE HOSPITAL.—The recently published forty-third annual report of the Central State Hospital at Petersburg, Va., records the work of that institution for the fiscal year ended Sept. 30, 1913. During this period 990 male and 997 female patients were inmates of the hospital. Twelve of these had pellagra, of whom ten died. All the colored insane of Virginia are maintained in this institution, there being none in any almshouse, jail, or other local establishment.

AMERICAN SOCIETY FOR THE CONTROL OF CANCER.—The American Society for the Control of Cancer in coöperation with the Twentieth Century Club and the Pittsburgh Academy of Medicine held a public educational meeting on cancer, in the Soldiers' Memorial Hall, Pittsburgh, on Tuesday evening of this week, Feb. 3.

Invitations were sent to the most representative and influential people in Pittsburgh and vicinity, including members of women's clubs, men's clubs, bankers, manufacturers, attorneys, ministers, teachers, physicians, and others.

Hon. James R. Macfarlane presided, and Mr. Frederick L. Hoffman, the statistician of the Prudential Life Insurance Company, made the opening address. The chairman of the Committee on Organization of the American Society for the Control of Cancer described the purpose and plans of that Association, which has recently been formed as a national agency to disseminate knowledge concerning the symptoms, diagnosis, treatment and prevention of cancer; to investigate the conditions under which cancer is found and to compile statistics in regard thereto.

BOSTON AND NEW ENGLAND.

IN MEMORY OF DR. FIFIELD.—Resulting from the International Medical Congress which met in London last summer, the gift of a clock for the Commons room at the Royal College of Surgeons has been made in memory of the late Dr. William C. B. Fifield of Dorchester, for many years on the staff of the Boston City Hospital. Dr. Fifield was an honored graduate of the Royal College and served several years in the London hospitals before beginning practice in Dorchester.

A CENTENARIAN.—Mrs. Tahis Langervin, who died on Jan. 27, at Somerville, Mass., is said to have been born in 1808 in Canada.

A MEDICAL NONOGENARIAN.—In the issue of the JOURNAL for June 19, 1913 Vol. clxviii, p. 930) we commented editorially on "a remarkable group of nonogenarians," comprising the four survivors of the Harvard College class of 1838. Since that time, two of these venerable men have died. Dr. James Lloyd Wellington, of Swansea, Mass., therefore now becomes the oldest living graduate of Harvard College, as well as of the Harvard Medical School, the senior Fellow of the Massachusetts Medical Society, and the oldest physician in the United States. Dr. Wellington, who continues in his habitual good health, celebrated on Jan. 27 his ninety-sixth birthday anniversary.

SOCIAL SERVICE AT THE MASSACHUSETTS GENERAL HOSPITAL.—The recently published eighth annual report of the social service department of the Massachusetts General Hospital records the many and varied activities of that body for the calendar year 1913. It is of great interest to those concerned in this form of work.

WILMINGTON WOMEN'S CLUB.—On Monday of last week, Jan. 26, the Wilmington Women's Club held a meeting at the North Reading Tuberculosis Sanatorium. Dr. Carl McCorrison, superintendent of the sanatorium, in an address to the meeting, advocated strongly the establishment of local community hospitals for advanced tuberculosis in all adjoining municipalities having an aggregate population of 10,000 or more. Dr. Edwin N. Kent, president of the Dental Hygiene Council of Massachusetts, spoke on "The Care of the Human Mouth," and Mrs. Eva G. Ripley, of Wakefield, Mass., described the establishment of the District Nursing Association in that town.

WORK OF CHILDREN'S HOSPITAL.—The forty-fifth annual report of the board of managers of the Children's Hospital was submitted at the annual meeting of the corporation, held in Boston on Jan 28. During the past year 1815 patients were treated in the wards, 27,153 in the out-patient department, and 3075 in the social service department. The hospital will soon move to its new buildings on Longwood Avenue.

MASSACHUSETTS HOMEOPATHIC HOSPITAL.—The annual meeting of the corporation of the Massachusetts Homeopathic Hospital was held in Boston on Jan. 27. The report of the trustees emphasized the need of the hospital for a new maternity building and children's ward. During the past year 22,452 patients were treated at the hospital, of whom 6508 were ward cases.

NEW LEPER INFIRMARY.—Plans and specifications have already been drawn by the Massachusetts State Board of Charity for a new leper infirmary to be built on Penikese Island at an estimated cost of $40,000.

"The proposed infirmary will be a one-story structure either of concrete or tile construction, with a wing on either end with accommodations for bed patients afflicted with pneumonia or consumption, which follow closely upon the latent period of leprosy. Two sections of the infirmary will be devoted to a scientific observation of the disease. One will be equipped with an x-ray and other modern apparatus. In the other section of the dispensary will be a consulting room, in which will be preserved the records of every individual case."

INSURANCE LIABILITY FOR OCCUPATION INJURIES.—In a recent case, in which a workman lost the sight of both eyes from optic neuritis, due to inhaling fumes while tending a gas-producing furnace, the Massachusetts Industrial Accident Board awarded the plaintiff $3000 for total disability and $952 additional compensation. The insurance company against which this award was made appealed to the supreme court under the contention that the word "injury" in the statute denotes only an accident caused by some sort of blow. The decision of the court in this test case is of importance as a precedent in determining whether any industrial disease may be construed as a personal injury within the meaning of the law.

HOSPITAL BEQUESTS.—The will of the late Jesse F. Frisbie, of Newton, Mass., who died on Dec. 17, 1913, was recently filed at the Middlesex registry of probate. It creates a trust fund for the establishment and maintenance at Rochester, N. H., of a new hospital, to be known as the Frisbie Memorial Hospital.

The will of the late Mrs. Charles M. Day, of Worcester, Mass., which was filed for probate on Jan. 28, contains a bequest of $10,000 to constitute a trust fund, to be known as the Bancroft-Day Fund, for the benefit of the Milford (Mass.) Hospital.

The will of the late John Ware Willard, of Brookline, Mass., who died on Jan. 19, was filed

recently in the Norfolk county probate registry at Dedham, Mass. It bequeaths to the New England Hospital for Women and Children, the Children's Hospital, and the Boston Floating Hospital each one-seventh of all or any property which may be inherited from the testator's father. To the Children's Hospital, the Boston Floating Hospital, and the Boston Lying-in Hospital, it bequeaths each one-fourth of any and all property which may be inherited under the will of the testator's mother.

The will of the late Benjamin Leeds, of Roxbury, Mass., which was filed for probate on Jan. 27, contains a bequest of $50,000 to the Massachusetts Homeopathic Hospital.

The will of the late Morrill Wyman, of Cambridge, Mass., which was filed on Jan. 29, in the East Cambridge probate court, contains bequests of one-fourth of the residuary estate to the Cambridge Hospital and one-half to Harvard College to establish the Morrill Wyman Medical Research Fund in the Medical School.

NEW YORK.

AN APPEAL FOR RADIUM.—The New York Skin and Cancer Hospital has issued a formal appeal for the use of 500 milligrams of radium (which at present prices would be worth $50,000). In this appeal it is stated that the radium could either be given outright or loaned for a period of five years. Since one-half of the institution is devoted exclusively to the treatment of cancer, its authorities feel that it should have an opportunity to make an exhaustive study of the value of radium in such treatment. No less than 500 milligrams is required, since, in the opinion of experts, less than this amount would not afford a fair test of the usefulness of the agent for this purpose.

DONATIONS TO MT. SINAI HOSPITAL.—At the annual meeting of the managers of the Mount Sinai Hospital, held on January 25, donations of over $325,000 were reported. This amount includes the Benjamin Altman legacy of $100,000, a $100,000 legacy from Mrs. L. W. Neustader, and a gift of $125,000 from Joseph and Sophie Sachs, in memory of their parents, to endow two neurological wards of fifteen beds each. The total expenditures during the year were $469,892, and the income from all sources, $421,384, and the amount of the deficit was borrowed from the permanent fund. A silver service was presented to Dr. A. G. Gerster, senior attending surgeon, who retired from the hospital staff on Jan. 1, after a service of 39 years, and a silver Greek vase to Dr. Julius Rudisch, who retired to become consulting physician, after a service of 34 years on the active staff.

APPOINTMENT OF DR. LINSLEY R. WILLIAMS.—Commissioner Biggs has appointed Dr. Linsley R. Williams of New York deputy commissioner of the State Department of Health.

VENEREAL DISEASES.—The city authorities having failed to make any provision for carrying on the work of the Health Department's division of venereal diseases during 1914, the Bureau of Social Hygiene has, as last year, come to the assistance of the department and has pledged a fund sufficient to maintain the positions of a medical adviser, one bacteriologist, six laboratory assistants, one stenographer, and three helpers. During 1913, 18,750 blood specimens were tested for syphilis, and 3,526 for gonorrhea. One orphan asylum now has Wassermann tests made on every child before it is admitted to the institution. In view of the fact that many physicians do not seem as yet to appreciate the attitude of the Health Department towards venereal disease, and that some persist in the belief that cases are being treated in the diagnostic clinics, a portion of a letter recently addressed to all physicians in the city has been reproduced in the *Weekly Bulletin* of the department. In this it is stated: "In order to extend the usefulness of these clinics in combating the spread of venereal diseases, a specially trained physician has been appointed to act as 'medical adviser' to the patients attending. Under no circumstances will he treat cases. His duties consist in advising patients as to the nature of their disease, the necessity of proper medical treatment, the dangers of self-treatment, and the importance of obeying the directions of their physicians."

A CENTENARIAN.—Dennis Redmond of the Borough of the Bronx, New York City, died on January 21, after having just reached the age of 100 years. He was born in Dublin, Ireland. on Jan. 1, 1814, and came to this country in 1847. Until the age of 92 he had been in the employ of a well-known men's clothing firm in New York.

QUARANTINE FOR DIPHTHERIA ON THE "ARKANSAS."—Eight hundred officers and men were quarantined on Jan. 26, aboard the United States battleship *Arkansas*, recently arrived at Brooklyn from a Mediterranean cruise with a case of diphtheria.

LEGALITY OF COMPULSORY VACCINATION.—On Jan. 23, the appellate division of the supreme court handed down a decision affirming the recent conviction of a citizen for violation of the compulsory education law in refusing to have his son vaccinated. This decision is of importance as a precedent in declaring the legality of compulsory vaccination.

SMALLPOX AT NIAGARA FALLS.—Report from Niagara Falls on Jan. 29 states that during the three weeks then ended 133 cases of smallpox were notified in that city.

Current Literature

MEDICAL RECORD.

JANUARY 17, 1914.

1 HENRY, F. P. *The Diagnosis and Treatment of Lumbosacral Pelvic Pain.*
2. STRAUCH, A. *Disorders in Children by Imitation and Induction.*
3. MANS, L. M. *Alcohol and Racial Degeneracy.*
4. MAYS, T. J. *The Therapeutic Value of Crotalin in the Treatment of Epilepsy.*
5 HANSELL, H. F. *Some Further Experiences in the Extraction of Immature Cataract by the Homer C. Smith Method.*
6. SHEEHAN, J. E. *The Case Against the Eugenists.*
7. *MACFARLANE, A. *Venesection in Cerebral Hemorrhage, with Report of Cases.*
8. WIENER, A. *A Preliminary Report upon the Specific Action of Ethyl Hydrocuprein on Pneumococcus Infections of the External Tissues of the Eye.*

7. MacFarlane extols the value of venesection in cases of apoplexy. If the blood pressure is above 200 mm., he says, this procedure is urgently indicated. It lessens the hemorrhagic effusion and allows coagulation. Prompt blood-letting may save such a patient from a permanent hemiplegia, which is worse than death. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

JANUARY 17, 1914.

1. HEMMETER, J. C. *Hypertonicity and Hypotonicity of the Vagus and the Sympathetic Nervous System.*
2. *GORDON, A. *The Cerebrospinal Fluid and a Special Method of Treatment of Essential Epilepsy.*
3. COCKS, G. H. *The Results of Tonsil Operations on Public School Children in New York City.*
4. HOAG, A. E. *Treatment of Wounds and Infections.*
5. ALLAN, W., AND WRIGHT, T. H. *Functional Leucorrhea.*
6. HAYNES, I. S. *Intestinal Kinks; Their Diagnosis and Treatment.*
7. CROHN, B. B. *Periodic Explosive Toxemias.*
8. BREDIN, W .W. *A New Urethrotome.*
9. DOUGLAS, C. J. *The Institutional Treatment of Drug Addiction.*
10. ALEXANDER-BOWERS, R. *Standardization of Brains.*

2. Gordon makes a preliminary report on the treatment of epilepsy with subcutaneous injections of cerebrospinal fluid from another epileptic. In four cases the writer observed striking improvement in the severity and frequency of seizures after this treatment. He also observed that the cerebrospinal fluid of each patient acted specifically (causing hemolysis) on another's blood, but not on his own. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JANUARY 17, 1914.

1. SUTTON, R. L. *The Symptomatology and Treatment of Some Variant Forms of Lichen Planus.*
2. *HOUGH, W. H. *Intraspinous Injection of Salvarsanized Serum in the Treatment of Syphilis of the Nervous System, Including Tabes and Paresis.*
3. *MCCASKEY, G. W. *The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System.*
4. PFAHLER, G. E. *Present-Day Danger of Roentgen-ray Burns and How to Prevent Them.*
5. *BREM, W. V. *Treatment of Tetanus by the "Rational" Method of Ashhurst and John. The Development of Suppurative Serum (Aseptic) Meningitis Following the Intraspinal Injection of Tetanus Antitoxin; with Report of a Case.*
6. *SPITZIG, B. L. *A New and Logical Treatment for Alcoholism. A Preliminary Report.*
7. GORDON, A. *Administrative and Prophylactic Measures Against Alcoholism.*
8. BUTLER, A. H. *The Dosage of Cocaine and Other Drugs Used for Producing Local Surgical Anesthesia.*
9. *BALLINGER, E. G. *The Elimination of Gastric Disturbance Produced by Sodium Carbonate, Iodids, Oil of Sandalwood and Similar Drugs.*
10. FOWLER, R. S. *Movable Spleen.*
11. MURPHY, J. B. *A Source of Defence to Heteroplastic Tissue Grafting.*
12. ARMSTRONG, D. B. *The House-fly and Diarrheal Disease Among Children.*
13. EBRIGHT, G. E. *The Effects of Nitroglycerin on Those Engaged in Its Manufacture.*
14. STEIN, I. F. *A Case of Oxycephaly.*
15. MOTT, W. W. *Strangulated Femoral Hernia in a Patient Aged Eighty-Three.*
16. WESSON, M. B. *Clinical Report of a Case of Rabies Treated with Neosalvarsan and Quinin, Together with a Case of Lyssophobia.*
17. HAMAKER, W. D. *A Unique Case of Bowel Obstruction.*
18. TRUESDALE, P. E. *The Sponge Count.*
19. FIGUEROA, S. *A Simple Method of Recording Vaginal Discharges.*

2 and 3. Both of these authors believe that the subarachnoid injection of salvarsanized autoserum is a safe and valuable method of treating cases of cerebrospinal syphilis, especially tabes and forms of paresis.

5. Brem quotes two interesting cases of tetanus treated by intraspinal injection of antitetanic serum in which an aseptic serum meningitis developed and from which both recovered.

6. Spitzig substitutes sugar for alcohol in his treatment of alcoholics, gradually increasing the carbohydrate and diminishing the sugar.

9. Ballinger and Elder suggest hardening in formalin the capsules in which such stomach upsetting drugs as sodium carbonate, iodids and sandalwood oil are used. [E. H. R.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

NOVEMBER, 1913.

1. *LIBMAN, E. *The Clinical Features of Cases of Subacute Bacterial Endocarditis That Have Spontaneously Become Bacteria-free.*
2. *FOSTER, G. B. *The Noguchi Luetin Reaction in Syphilis.*
3. *DA COSTA, J. C. *Dorsal Percussion in Enlargements of the Tracheo-bronchial Glands.*
4. *SMITH, A. J., LYNCH, K. M., AND RIVAS, D. *The Transmissibility of the Lepra Bacillus by the Bed-bug (Cimex Lectularius L.).*
5. KLOTZ, O. *Syringomyelia: with Autopsy Findings in Two Cases.*
6. *THOMAS, B. A. *Modern Genito-urinary Diagnosis and Treatment, with Reference Especially to Laboratory Methods.*
7. *WARREN, L. F. *An Orthodiagraphic Study of a Case of Bronchial Asthma.*
8. CAMP, C. D. *A Contribution to the Study of Hereditary Degeneration (Pseudohypertrophic Muscular Dystrophy in Combination with Degeneration in the Central Nervous System).*
9. HOPKINS, A. H. *Two Instances of Chronic Family Jaundice.*
10. *STETTEN, DE W., AND ROSENBLOOM, J. *Clinical and Metabolic Studies of a Case of Hypopituitarism Due to Cyst of the Hypophysis with Infantalism of the Lorain Type.*
11. VERBRYCKE, J. R. *The Diagnosis of Gastric Ulcer.*

1. Libman reports an analysis of the clinical features of 21 cases of subacute bacterial endocarditis that spontaneously became bacteria-free. In 17 of the 18 cases that had died at the time of publication autopsies were performed, proving that the condition under discussion was present. The duration of the disease may be as long as two and a half years before death, and a few cases appear in literature that are reported to have survived. In most cases the early symptoms were cardiac in nature, but in some, uremia was rather suggested. Fever was less prominent than in the bacterial cases. Evidence of valvular lesions was present in all, but no new lesions are believed to have developed in the bacteria-free stage. Anemia was present in all, and in many cases was extreme. The spleen was palpable in all but four, and in some cases was enormously enlarged. Sweats and loss of weight were less prominent than in the bacterial cases. Embolism was as common as in the bacterial cases. Progressive brown pigmentation of the face was a striking symptom in nine cases and was seen to a marked degree only in the bacteria-free cases. The cases as a whole are separated into five groups according to their most conspicuous features: Marked progressive anemia, brown pigmentation of the face, marked evidence of renal disease, marked enlargement of the spleen, or embolic symptoms.

2. Foster reports the following results with the Noguchi luetin reaction: Of 13 cases of secondary treated syphilis, 77% were positive. Of 5 cases with tertiary lesions 80% were positive. Of 52 cases of syphilis in the stage of latency or cure, 88% reacted. Of 5 individuals presumably free from syphilis one reacted—a man in whom infection seemed highly improbable, but whose maternal grandmother was believed to have had tabes. It is concluded that the luetin test is of value to supplement the rôle of the Wassermann reaction, the latter being of greatest value in the earlier stages and the former in the tertiary and latent stages. Its prognostic value in determining whether the infection has been eradicated is emphasized.

3. De Costa's article is a reiteration of his belief in the value of light percussion over the thoracic vertebral spines in the diagnosis by the presence of dullness of enlargement of tracheo-bronchial glands or other mediastinal tumors.

4. Smith, Lynch and Rivas publish evidence that bed-bugs may take up the lepra bacilli with blood; that within the bugs for a time the bacilli increase in size and apparently in numbers, but eventually disappear; that the bacilli are found in the glands as well as in the alimentary canal of the bugs; that bed-bugs acquire lepra bacilli from leprous human subjects; and that they may transmit the bacilli to the skin of an animal bitten. The authors conclude, however, that if bed-bugs really do transmit the disease they are only one of a number of possible conveyers.

6. Thomas's article is one too comprehensive for profitable review, being rather an enumeration than a description of the many procedures now applied to the diagnosis and treatment of the male genito-urinary apparatus in all its divisions. Its perusal, however, brings strikingly to mind to what an extent bacteriology, serology, cystoscopy, radiography and chemistry have advanced and complicated the subject.

7. Warren reports that fluoroscopic study of a case of bronchial asthma showed that the pulmonary distention continued for several weeks after the cessation of a prolonged attack, the heart maintaining a vertical position. During the attack the diaphragm moved but slightly, and in movements in reverse of the normal.

10. Stetten and Rosenbloom report upon results of metabolism experiments in a marked case of hypopituitarism. Of chief note was the finding of high and abnormal percentages of the neutral sulphur and of the undetermined nitrogen in the urine. [F. W. P.]

DECEMBER, 1913.

1. *WILSON, L. B. *The Pathology of the Thyroid Gland in Exophthalmic Goiter.*
2. *PLUMMER, H. S. *The Clinical and Pathological Relationship of Simple and Exophthalmic Goiter.*
3. *BLACKFORD, J. M., AND SANFORD, A. H. *A Demonstration of a Depressor Substance in the Serum of the Blood of Patients Affected with Exophthalmic Goitre.*
4. *RUSSELL, F. F. *Antityphoid Vaccination.*
5. CHURCHMAN, J. W. *Cutaneous Manifestations of Septicemia.*
6. TAYLOR, A. S. *Conclusions Derived from Further Experience in the Surgical Treatment of Brachial Birth Palsy (Erb's Type).*
7. *EINHORN, M. *Further Experience with Stretching the Pylorus.*
8. *BRILL, N. E., AND MANDELBAUM, F. S. *Large-cell Splenomegaly (Gaucher's Disease): A Clinical and Pathological Study.*
9. MOLEEN, G. A. *Metallic Poisons and the Nervous System.*
10. PEMBERTON, R. *The Metabolism, Prevention, and Successful Treatment of Rheumatoid Arthritis: Second Contribution.*

1 and 2. The papers of Wilson and of Plummer are the result of studies of the large material of the Mayo Clinic. In a previous report, Wilson showed that among thyroids removed from toxic goiter cases pathologically the glands were divided between two distinct types. Clinical studies carried on with Plummer have now led to the conclusion that toxic goiter cases may be divided into two classes, the exophthalmic and the non-exophthalmic. It is now shown that of 1208 cases of toxic goiter, 79% had glands showing primary hypertrophy and hyperplasia, and practically without exception had the clinical features of true exophthalmic goiter. The remaining 21% of the cases had goitres showing either regenerations or adenomas, and none of these were grouped clinically as true exophthalmic goiter.

3. Blackford and Sanford report evidence that fresh extracts made from exophthalmic thyroids contain a powerful depressor substance, and that a powerful depressor substance likewise exists in the blood

serum of cases of exophthalmic goitre in direct proportion to the clinical acuteness and severity of the diseases. The sera of patients with non-hyperplastic thyroids, on the other hand, do not have a depressor action. After an active depressor dose of serum from a case of exophthalmic goiter the depressor action of the extract of an exophthalmic goitre is weakened or abolished, and the converse of this is also true.

4. Russell's article is a careful summary of the evidence upon which the efficacy of antityphoid vaccination is based. Those interested in the details of this subject will do well to consult this work.

6. Taylor reviews the etiology of brachial birth palsy, and protests that contrary to common teaching the prognosis under expectant treatment is exceedingly bad. It is, moreover, aggravated by the fact that the deformity, at first functional, later becomes fixed by secondary organic pathological changes. From his experience with 43 operated cases he is convinced that the prognosis is much improved in cases treated surgically. The operation consists of incision through the skin and fat at the base of the neck, suture of ruptured nerves, fixation for a period, and then careful passive and later active motion. The time of choice for operative interference is from two weeks to three months after birth.

7. Einhorn describes cases of pylorospasm and of stricture of the pylorus treated by instrumental dilation, according to his method previously published. This method is not supported as a substitute for surgery, but is advocated in functional cases and in cases where surgical interference cannot be applied.

8. Brill and Mandelbaum discuss at length the condition known as Gaucher's disease, of which but 14 proved cases are recorded in the literature. The disease occurs chiefly in childhood and often in more than one member of the same family. Its features are a progressive enlargement of the spleen and later of the liver, to an enormous size, with a brownish yellow discoloration of the skin of the face, neck and hands, and a yellowish thickening of the conjunctivae. It has a prolonged course, which does not materially disturb the health of the patient. The blood shows a definite leukopenia. The pathological feature is the presence in the spleen, liver, lymph-glands and bone marrow of distinctive large cells of unknown origin, to which the enlargement of the liver and spleen is due. [F. W. P.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT.

No. 52. DECEMBER 30, 1913.

1. *GERHARDT, D. *Pain Referred to the Shoulder in Pleurisy.*
2. MAYER, W. *The Specificity of Abderhalden's Protective Ferments.*
3. TUSZEWSIK. *"Elarson."*
4. *ROEMHELD, L. *Modern Obesity Cures.*
5. RAUENBUSCH. *Filariasis of the Eye.*
6. GRÄF, E. *A Forgotten Obstetrical Manoeuvre.*
7. V. SCHUBERT, E. *Serum as a Vehicle for Neosalvarsan.*
8. V. HERFF. *Improved Serres Fines.*
9. KOCH, R. *The Preservation of Serum from Convalescent Scarlet Fever Patients.*
10. TRAUTMANN, G. *A Plastic Variation in Extracapsular Extirpation of the Tonsils.*
11. RAUTENBERG, E. *The Recording of Auricular Tracings in Man.*

1. It is recognized that the symptom of pain in pleurisy may be referred to the abdomen, neck or to the shoulder joint. The abdominal pain is usually explained as being due to a sympathetic stimulation of those intercostal nerves whose roots originate in the same region as the nerves supplying the injured pleura. Less attention has been paid to pain referred to the shoulder joint. Gerhardt reports four cases of different types of pleurisy with such pain. It was so severe in two cases that the diagnosis of arthritis was made. He explains the symptom as being a reflex stimulation of those peripheral nerves whose fibres originate in the same spinal segments as the sensitive fibres of the phrenic nerve.

4. The methods in use for ridding patients of excessive fat are by dietetics, by physico-mechanical means, or by medicines. Bergioné's electrical instrument has received much attention lately, and Roemheld has conducted experiments to determine its value. His conclusions are that Bergioné has merely offered a passive means of muscular exercise to substitute active exercise during the time of the cure. The use of the machine alone produces no definite loss of weight, and it is only effective when a dietetic cure is undertaken at the same time. [R. F.]

BERLINER KLINISCHE WOCHENSCHRIFT.

No. 47. NOVEMBER 24, 1913.

1. KRAUSE, F. *An Unusual Tumor of the Cerebellum, Cured by Operation.*
2. *UNGER, E. *An Operation for Aneurysm with Vessel Transplantation.*
3. MANKIEWICZ. *Hemorrhage into the Joints in Hemophilia.*
4. SKALLER. *Our Methods of Studying the Secretion of Gastric Juice and the Plotting of the Same in Curves.*
5. *HUBER. *The Effect of Splenectomy in Pernicious Anemia.*
6. THEOBALD, M. *The Application in Psychiatry of Abderhalden's Methods of Serum Diagnosis.*
7. SCHERER, A. *Practical Experiences with Abderhalden's Pregnancy Test.*
8. MÜLLER, R., AND STEIN, R. O. *Observations on the Skin Reaction in Syphilis and Its Relation to the Wassermann Test.*
9. HAHN, B., AND KOSTENBADER. *A Contribution to the Explanation of the Action of Mercury in Syphilis.*
10. WECKOWSKI. *A Dosage Table for Giving Radium or Mesothorium.*
11. GERBER, O. P. *The Treatment of Bronchial Asthma with Dr. Bayer's Vibro-inhalation Apparatus.*
12. RAUCH, R. *The Introduction of Heyden's "Noviform" in the Treatment of Diseases of the Eye.*
13. WEGELIN, C. *The Relation of Fatty Degeneration of the Heart to Diet.* (*Concluded.*)
14. LANDSBERGER, R. *A Suction Syringe.*

2. The author presents one case in which he resected the popliteal artery for aneurysm and grafted in a piece of the saphenous vein of the same leg, 15 cm. long, with a perfect result. In a second case he resected an arterio-venous aneurysm between the femoral artery and vein, sutured the cut ends of the vein and grafted in a 10 cm. section of the saphenous vein to connect the ends of the artery. This case also was successful. A third case in which he attempted the same procedure for popliteal aneurysm was unsuccessful. Unger is very enthusiastic over this method of treating aneurysm.

5. The author reports a case of pernicious anemia showing amelioration of symptoms and also improvement in the blood picture following splenectomy. Contrary to the generally accepted teachings he unhesitatingly recommends this treatment where other therapeutic measures fail. [R. H. M.]

No. 48. DECEMBER 1, 1913.

1. HERXHEIMER, K., AND KÖSTER, H. *Some Therapeutic Experiments with Pilocarpine Hydrochloride in Parapsoriasis.*
2. MENZER, A. *Rheumatism and Tuberculosis.*
3. WEIHRAUCH, K. *The Use of Camphor as an Antipyretic in Tuberculosis of the Lungs.*
4. *STRAUSS, H. *Fluorescein as an Indicator of Renal Function.*

5. *GLASER, F. *Erysipelas in Nephritis, and Its Therapeutic Effect.*
6. PAKUCHER. *The Treatment of Infectious and Post-gonorrheal Urethritis with Lytinol.*
7. HART, C. *The Occurrence of Anomalous Cavernous Plexuses in Place of the Portal Vein.*
8. KIRSCHNER, M. *On the Cause of Bleeding in Hemorrhoids.*
9. KERN, H., AND MÜLLER, E. *A Simplified Method of Making Eiweissmilch.*
10. FOERSTER, R. *The Expert Opinion in a "Telephone Accident" in the Imperial Court, Berlin.*

4. The author's method of using fluorescein is to give one gram by mouth in the morning; to estimate roughly the time of appearance by having the patient void every few minutes; and then at the end of thirty hours have the patient void once an hour till the fluorescence no longer appears in the urine. The test is done entirely with the eye, as the only points to be observed are the time of appearance and the end-point of the excretion. The urine should be made alkaline. Normally the drug appears in from ten to twenty minutes and is all excreted in from thirty-five to forty hours. If the total excretion takes between forty and 50 hours the renal capacity is suspicious, over fifty hours the author considers pathological. This is only a rough test, but in a few cases it has run parallel to other functional tests—phthalein, and potassium iodide. About thirty cases were tested in all, and so far as described in this article fluorescein does not seem to be so useful as phenolphthalein.

5. Glaser reports the case of a boy of twelve with severe subacute nephritis, with edema, ascites and hydrothorax, in whom an extensive erysipelas of the trunk and thighs was followed by a complete clinical cure of the nephritis, the urine showing neither albumin or sediment. He has collected four other cases, from the literature, of chronic nephritis being apparently cured in the same way. He advances two theories to explain these cases—first, that the erysipelas gave rise in the body to fresh streptococcus antitoxins which influenced favorably renal lesions caused by streptococcus toxins; and, second, that favorable circulatory changes might have been brought about in the kidney by the intense hyperemia of the skin. [R. H. M.]

DEUTSCHES ARCHIV FÜR KLINISCHE MEDIZIN.

NOVEMBER 28, 1913.

1. *SCHOTT, E. *Investigations upon a Complete Parenteral Nourishment.*
2. *EISNER, G. *Influence on Renal Function of Man of Calcium Salts.*
3. MEYER-BETZ. *Investigations upon the Biological Effect of Hematoporphyrin and Other Derivatives of Blood and Biliary Coloring Matter.*
4. VEIL, W. H. *Clinical Importance of the Determination of Blood Concentration.*
5. KOSSOW, H. *The Liver and Formation of Acetone Bodies.*
6. GANTER, G. *Analysis of Electrocardiograms. (Examinations of Warm-Blooded Hearts in Situ.)*
7. v. HOESSLIN, H. *Clinical Roentgenological Investigation of Pulmonary Cavities by Fluid Level.*
8. KOPPEL, M. *The Fluid Absorption of Organic Tissue with Different Hydrogen Ion Concentration.*

1. In this article Schott takes up the question of preservation of life by means of injection of nourishment directly into the circulation rather than by absorption through the alimentary tract. He has studied the effect of such injections from many points of view and reports his findings here. His work has been in good part experimental. He concludes that rabbits and dogs can be held in nitrogenous equilibrium by injection of egg yolk and salt solution up to the appearance of anaphylactic phenomena. This albumen will only in a small percentage be present in the urine as coagulable albumen. Most of it is burnt in the organism. The fat so introduced disappears from the circulation in about 1½ hours and is apparently used as nourishment. Carbohydrates introduced intravenously as dextrose appear to offer the means for burning albumen in the organism just as when introduced through the digestive tract. The anaphylactic appearances occur about on the fourth or fifth day with rabbits and at the fourteenth day with dogs.

2. Eisner has studied the effect of calcium salts upon the renal function in man. As a test for renal function he has studied iodide excretion. Milk sugar excretion, sodium chloride excretion, nitrogen excretion, phenolsulphonephthalin excretion and water excretion, as well as the excretion of calcium salts. He used calcium lactate as his calcium salt. In only one case in any of the functional tests was there any improvement after calcium. In others no improvement or a diminution of function. He feels that although calcium may not help renal function it may still be of some value in certain renal conditions, just as atophan aids the permeability of the kidney for uric acid. [C. F., JR.]

Miscellany.

RELATIVE SIZE OF AMERICAN UNIVERSITIES AND MEDICAL SCHOOLS IN 1912 AND 1913.

IN a recent issue of *Science* are tabulated the registration returns for Nov. 1, 1913, of thirty of the leading universities of the United States. Of these only three,—Harvard, Western Reserve, and Yale,—show a decrease in numbers from 1912. The order of size of the thirteen largest universities in 1912 was Columbia, California, Chicago, Harvard, Michigan, Cornell, Wisconsin, Minnesota, Pennsylvania, New York, Illinois, Northwestern, and Ohio. In 1913 these thirteen remain in the lead, but their order is changed as follows: Columbia, California, Chicago, Michigan, Pennsylvania, Wisconsin, Harvard, Cornell, New York, Illinois, Ohio, Minnesota, and Northwestern. In number of undergraduates, however, Harvard still stands first, and is followed by California and Michigan. Among the medical schools the order of size in 1913 is Illinois, New York, Tulane, Johns Hopkins, Michigan, Columbia, and Harvard.

FIRST NATIONAL CONFERENCE ON RACE BETTERMENT.

FOUR hundred men and women of prominence, comprising the first representative group of scientific experts ever gathered in America for that purpose, met in Battle Creek, Mich., Jan. 8-12 to assemble evidence of race deterioration and to consider methods of checking the downward trend of mankind. The meeting was known as the First National Conference on Race Betterment. Through the coöperation of the press, the objects and aims of the Conference

have been very widely disseminated and a resultant influence for better race ideals is anticipated.

Already the effect of the Conference is apparent in Battle Creek, where popular interest in mental and physical efficiency was awakened by a series of public school tests which showed an alarming percentage of defective children in all grades.

The conference had its inception in the efforts of four men, particularly interested in race betterment—Rev. Newell Dwight Hillis, pastor of Plymouth Church, Brooklyn, N. Y.; Dr. J. H. Kellogg, of the Battle Creek Sanitarium; Sir Horace Plunkett, former minister of agriculture for Ireland; and Prof. Irving Fisher of Yale University. At the invitation of a central committee, chosen largely by these men, fifty men and women of national prominence in the fields of science and education, consented to share in the program. Their addresses, together with open discussion of many of the points considered, constituted a very widespread study of all phases of evident race degeneracy and the advocacy of many ideas of reform. Some of the suggested methods of improvement are frequent medical examination of the well, outdoor life, temperance in diet, biologic habits of living, open air schools and playgrounds, the encouragement of rural life, the segregation or sterilization of defectives, the encouragement of eugenic marriages by requiring medical certificates before granting license and the establishing of a eugenics registry for the development of a race of human thoroughbreds.

Correspondence.

INFECTION IN TUBERCULOSIS.

Mr. Editor: My attention has been called from several sources to an article in the *Christian Science Monitor* of Jan. 24, 1914, which purports to present my ideas as to infection in tuberculosis. The article mentioned quotes only a part of a paragraph relating to the subject and which was quoted in an editorial by the *Journal of the American Medical Association* in a recent issue. (Jan. 3, 1914.)

The part which they quoted was so used as to give the impression that I did not believe tuberculosis was infectious. As a matter of fact it was intended to explain the well-known belief at present that childhood is the time of infection, and that more protection ought to be given for children and more hygiene for adults. A reference to this editorial would make this entirely clear.

The original paper related to the fact that a certain degree of immunity is acquired by adults by small infections occurring in early life which gave them more or less immunity against infection later. It was in no way stated that tuberculosis was not infectious nor should I be misrepresented in this way. Not only do I believe tuberculosis to be infectious,—and especially so for persons who have not been protected by mild infections in childhood,—but chiefly from the open case of tuberculosis is the danger very great in the home where small children come in contact with the patient. On no account do I oppose the movement for the segregation of the open tuberculous, but my plea was for more reasonableness in the attitude of adults as to their own danger. I am strongly in favor of all the measures which are aimed to protect the public and to care for all classes of tuberculous patients. It is extremely wrong and I am greatly chagrined that my statements should be used to represent any other idea. I am

Respectfully yours,

EDWARD R. BALDWIN, M.D.

MEDICAL CORPS, U. S. NAVY.

The following changes have been made in the Medical Corps, U. S. Navy, for the week ending January 24, 1913:

January 16, P. A. Surgeon B. H. Dorsey, detached: Camp Elliott, Canal Zone, to *Connecticut*.

SOCIETY NOTICES.

The next meeting will be held on Tuesday evening, February 10, in the amphitheatre of the Peter Bent Brigham Hospital at 8.15 o'clock. Program:

"Exhibition of Cases," Dr. A. Luger. "Spastic Conditions of the Stomach," Thomas Ordway, S. F. Hammett, Wm. J. Kerr. "The Effects of the Surface Applications of Radium over the Spleen in a Case of Chronic Lymphatic Leukemia," Dr. William Duane.

Remarks on the Surgical Properties of Radium and Its Derivatives.

THOMAS ORDWAY, *Secretary and Treasurer*,
Harvard Medical School.

HOSPITAL MEETING: MASSACHUSETTS GENERAL HOSPITAL.

The next hospital meeting will be held at 8.15 p. m. on Feb. 13, 1914 in the lower amphitheatre of the Out-Patient Department. The subjects are to be as follows:

1. "Causes of Scoliosis," by Dr. Z. B. Adams.
2. "Back Pain and Its Diagnosis," by Dr. Harry Platt.
3. "X-ray Diagnosis of Lesions of the Lumbar Spine and Sacro-iliac Joint," by Dr. C. Hermann Bucholz.
4. "Use of Plaster Backs in Post-operative Backache," by Dr. John McCartin.

APPOINTMENTS.

DR. EARL H. MACMICHAEL has recently been elected city physician and DR. WALTER W. KINGSBURY a member of the board of health of Malden, Mass.

DR. HARRY E. SEARS of Beverly, Mass., has been comfirmed as Associate Medical Examiner of Essex County.

RECENT DEATHS.

DR. JAMES HARVIE DEW of New York died from cerebral apoplexy on January 26, at the age of 70 years. He was a native of Newtown, Va., and served for a time in the Confederate Army. He was graduated from the medical department of the University of Virginia in 1867, and afterwards was an interne at the Charity (now City) Hospital, New York. Dr. Dew won for himself a very large clientéle, especially among the southern families living in New York. He was one of the most genial of men, and his death will be sincerely mourned by a host of patients and friends.

BOOKS AND PAMPHLETS RECEIVED.

Leitfaden der Säuglingskrankheiten für Studierende und Ärzte von Dr. Walter Birk. Bonn, 1914. A. Marcus & E. Webers Verlag.